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SATURDAY JULY 30 1949

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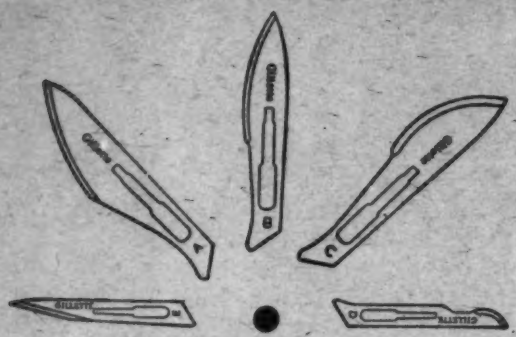

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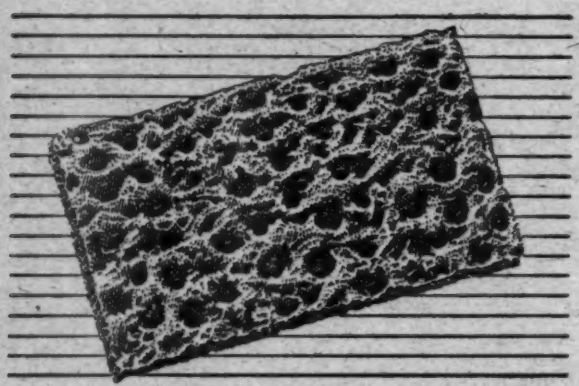

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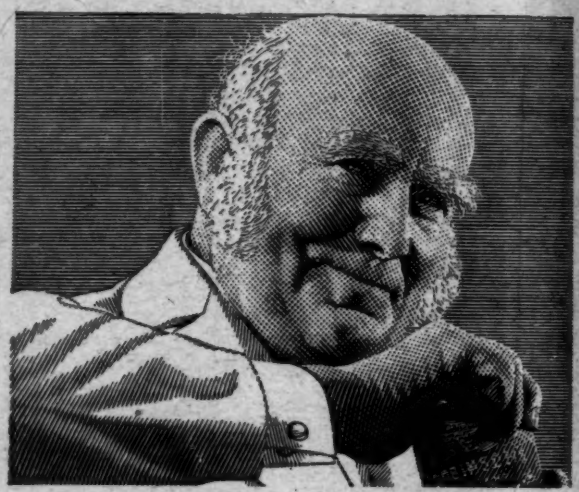

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BRITISH MEDICAL JOURNAL

LONDON SATURDAY JULY 30 1949

PROBLEMS OF AGEING AND CHRONIC SICKNESS*

BY

A. P. THOMSON, *M.C.*, M.D., F.R.C.P.

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The Problem

In the short span of 150 years the progress of medicine has been chiefly responsible for two distinct problems of population in Western Europe. In Great Britain, for instance, during the first part of that period the reduction of infant mortality and the control of infectious disease led to a rapid and embarrassing increase in the number of youthful inhabitants—from about nine millions in 1801 to forty millions at the close of the nineteenth century. Decline of the birth rate and emigration checked the increase, but the astonishing advance of curative medicine in the past 50 years has so prolonged the average duration of life that the total population is to-day larger by ten millions, and of the fifty millions in this country now no fewer than seven millions are over 60 years of age. As it is inevitable that in the immediate future the proportion of the aged will increase, and that the survival of individuals with chronic maladies will be greater, the urgency of the problem of the proper provision for the chronic sick and aged needs no emphasis. It has not indeed been neglected. Within the past two years this College (1948) and the British Medical Association (1947, 1948) have published reports from special committees on the care and treatment of the elderly and infirm, and in addition there have been a number of papers from individuals whose work lies mainly in this field. The relevant literature is interesting and abounds with suggestions for reform. There is a general demand for better classification of the patients and for their segregation, like with like, in appropriate institutions; the need for special housing for the old is emphasized, and a plea is made for the establishment of yet another medical specialty in the shape of geriatrics.

When I sought, however, for some factual and statistical analysis of the patients now in the institutions and for precise information about how they got there and why they stayed so long I often sought in vain, though Affleck (1947) in his psychiatric approach to the problem included some valuable figures, to which I will refer later. Lack of dispassionate statistical analysis is a weakness in these reports, and as there is nothing in the literature from the hospitals for the aged and chronic sick that compares, for instance, with Sheldon's (1948) account of the condition of the old people living in ordinary homes in Wolverhampton I decided to undertake an independent investigation; in addition it seemed probable that conditions would vary in different parts of the country.

The Position in the Midlands

In the Birmingham Hospital Region, which includes five counties with a population of 4.2 millions, there are 50 institutions concerned with the reception of the aged and chronic sick. Their variety is remarkable; most of them are small and understaffed, with old and dingy buildings and poor equipment. Some are parts of acute general hospitals; none have been well designed for their present use, and the concern expressed by the Nuffield Surveyors for the fate of their patients was amply justified. Most of these institutions have other functions, of which the most important is the accommodation of poor and homeless people who, though not sick, are in general unable to fend for themselves.

The number of beds available (apart from those for the insane and simply destitute) in these 50 institutions is 5,780, and of these no fewer than 2,400 are contained in five large establishments in densely populated areas. For comparison the total available for general medical and surgical use in the acute hospitals is only 5,960, but in addition there are about 1,000 beds for the same purpose in the teaching hospital. Briefly, of every 100 beds for general medicine and surgery in the region at least 45 are reserved for the chronic sick. This large proportion was to me surprising.

Dr. Richard Padley, of the University Department of Medical Statistics and Statistical Officer to the Regional Board, to whom I am indebted for these figures, also made an estimate of the staff employed in caring for the chronic sick (excluding medical and laboratory services), and found at the end of 1948 that 3,650 persons were so engaged. In other words 100 chronic beds required on average a whole-time staff of 61, made up as follows: trained nurses, 4; assistant or other nurses, 21; domestic workers, 22; laundry, 4; maintenance, 5; administration, 5. These are serious figures; with an ageing population it is obvious that the staffs necessary for institutions of this kind may soon become a serious drain on the national reserve of man-power.

The field to be explored was so extensive and the problems were to me so novel and perplexing that it seemed

*The first of two Lumleian Lectures delivered before the Royal College of Physicians of London on April 5 and 7.

impossible to investigate all the institutions closely, and I decided to concentrate attention on the largest—the Western Road Infirmary in Birmingham—and to be content with occasional visits to others.

First Impressions of Western Road

My most vivid impression of the chronic wards of this hospital is of an atmosphere of profound apathy. The patients seldom spoke to each other; they rarely moved, and although there was a library service and newspapers were provided it was exceptional to see one reading. At first we thought that this unnatural calm was a consequence of discipline imposed in preparation for our visits, but we were assured it was not so and that there was nothing unusual in it. Even when we were hours together in a ward and examined in turn every patient in it the prepotent sense of still foreboding and quiet resignation endured.

Contact with the patients was not difficult; histories of their social background and infirmities were mostly accurate and readily given, but what made them remarkable was the conspicuous absence of emotional overtones as they recounted them. There was no bewailing of their fate, no clamant sense of grievance, and they spoke of life's adventure with the detachment of a disembodied observer rather than with the passion of a participant. One old lady told us a strange story of many years of colourful life breeding and breaking ponies in the Welsh Marches, of visits to country fairs to sell them, of strange adventures in wild country, and of independent freedom rarely to be attained in England now. An accident crippled her and she had been long in bed. Her face was immobile as she spoke; the glory and the zest had departed; she was interested mainly in her tea, which was a little late. Food, indeed, was their major interest; it was astonishing how much they ate. Nearly all of them were well nourished, and most of them were stout. The wards came momentarily to life at meal-times.

Apathy prevailed also in the large rooms for those who were able to dress and move about: they sat listlessly and in silence; the men smoked as long as their tobacco lasted. In these rooms there was a striking difference between the sexes: the women were much more careful of their personal appearance; they were cleaner, their clothes were neater, and they were more readily responsive when addressed. Nearly all the women had capacious bags in which they collected a strange and pathetic assortment of trifles of little value—fragments of food, bits of cloth, and empty boxes. Both rooms emptied several minutes before a meal, and long queues were formed at the doors of the dining-hall, in which there was strict segregation of the sexes; even the married couples did not sit together, and they rarely expressed any wish to do so.

We were warned that the prevailing calm was sometimes broken by outbursts of petulant misbehaviour which were commonly the result of childish jealousy, resentment, or misdemeanour. Pilfering was common and led to trouble. The manner of the theft was often ingenious and astute. One man coveted the pipe that belonged to another who also had half a crown. The pilferer, although almost incapable of movement, got up one night and stole the half-crown. A little later he bought the pipe with the money he had stolen from its owner. The men who were up and about had another interest besides food—they gambled. Nearly every morning there was an hour of feverish activity in which they studied the racing information and arranged their bets for the day. The results they heard on the radio. Football pools were not neglected. Officially their financial resources were limited to five shillings weekly allowed to them out of their old age pensions, but a few earned small sums in addition by doing odd jobs. They had considerable freedom, and when fit enough and in the humour they went into the city on social occasions; not rarely they were drunk on their return. Some of the more adroit deposited their old age pension books with friends outside the institution and managed to retain the whole sum by drawing it when they went visiting. One old woman had defeated the regulations of authority in this manner for over two years; she had glorious "blinds" on the proceeds and was a source of considerable trouble. In the acute wards the atmosphere was like that of an ordinary general hospital. Most of the patients had been admitted from their homes but a short time before; they were interested, and still hopeful of recovery sufficient to allow them to gather up the threads of their customary way of life. It was here alone that we saw any evidence of anxiety; in the chronic wards there was the apathetic indifference I have described and in others there was frank psychosis, but in none of these was anxiety prominent.

The records of the patients in the wards for the deteriorated showed that many of them had passed from the acute block to the chronic beds, where later they had developed incontinence or other unpleasant antisocial habits which led to their transfer to this final refuge. Whether the process of decay is inevitable or whether it is caused or accelerated by the apathy surrounding the chronic beds is a matter worthy of consideration.

Medical Treatment

The medical treatment in Western Road Hospital was surprisingly good, although there were only five whole-time medical officers, including the medical superintendent, to care for 1,000 bedridden patients, and they had in addition many other responsibilities—a large venereal department, 150 patients who were up and about but unfit to return to their homes, and 300 inmates, including provision for maternity, under the control of the Social Welfare Committee set up by the National Assistance Act. My registrars made frequent visits, took histories, and made clinical examinations of the standard usual in a teaching hospital, and each week the staff of the infirmary, my registrars, and I spent a long afternoon together in the wards comparing the result of our separate observations. It was rarely necessary to change a diagnosis or possible to modify treatment. A considerable amount of laboratory and radiological investigation had been done in the departments of the Dudley Road Hospital close by.

The individual case records were, it is true, brief and to the uninitiated almost incomprehensible, and they were, unfortunately, unsuitable for exact analysis.

In this connexion I have used the words "medical treatment" in their narrowest sense to signify the therapeutic use of rest and drugs, because in the infirmaries no other form of treatment is generally possible. In Western Road no masseuse had worked for years; there was a room reserved for physiotherapy, but on the door of it was the notice "Do not enter," and within was a heap of electrical apparatus apparently in good order. Rehabilitation could not be attempted, because there was no staff and all the day rooms were full of beds; there was no occupational or diversional therapy, but a few women patients knitted and did needlework. I never saw a man engage in any spontaneous activity in the wards.

Nursing

Of the nursing in Western Road Infirmary I find it difficult to speak with due restraint. When we began our survey the patients were roughly classified thus:

	Males	Females	Total
Group 1: Bedridden	393	550	943
Group 2: Allowed up but unfit for transfer to homes without nursing care	67	73	140
	460	623	1,083
The number of incontinent patients among those confined to bed	162	295	457

In addition there was a small maternity ward and a considerable venereal-disease department.

The number of full-time nurses was 181; there were besides 90 half-time nurses, and if they be reckoned as the equivalent of 45 the total available was 226. Only 14 of these were State-registered; the remainder were either assistant nurses or in training.

These figures were given to us before we went into the wards, and I was prepared for an unpleasant experience: it seemed certain that we would find bedsores, dirty beds with the inevitable foul smell, and general untidiness and lack of cleanliness.

The truth was the exact reverse. The wards were clean, the beds were impeccably made (indeed, as we found later when studying consequent deformities of the feet, they were too well made and too firmly tucked in), there was no smell or untidiness. We were quite ruthless and perhaps a little rude in our first inspection; we pulled down bedclothes here and there looking for bedsores and dirty beds and found none. There were only nine bedsores in the whole institution, and these were in cases of gross organic nervous disease in the last stages.

Two nurses were on duty in wards containing 70 patients, of whom 30 were incontinent; they never stopped working—they did not come to speak to the doctor of the ward or to the matron unless they were sent for; quietly and efficiently they went on with their job. In the incontinent cases the backs "were done" every four hours day and night.

The equipment of the wards was lamentable; basins with running water were few and far between, the sluice-rooms were mainly archaic, though here and there a bed-pan washer had been installed; there were no pulleys over the beds; the baths were of the ordinary domestic type—the bedridden were wheeled to them once a week and laboriously lifted in and still more laboriously lifted out. Many of the women patients could not do their own hair, and yet it was tidy and obviously tended regularly by the staff. At night one assistant nurse was in charge of the 70 beds; to turn a helpless patient she had to fetch a nurse from another ward and render her the same service in return. The relations between the staff and the patients were good; in our later clinical examinations we heard frequent spontaneous tributes to the kindness of the nurses, and we were surprised at the extent of their knowledge of the social background and personal predilections of the patients.

Conditions such as these are by no means exceptional. In many institutions in the Birmingham Region they are much worse; in few are they as good. For instance, at Exhall Hospital, in Coventry, there were only two resident nurses for 274 patients of the same sort; at night there were often not enough to allow one to each ward of 50 beds, and "runners" were employed to call nurses when and where they were most needed. Yet the work was done; we found the wards clean and the patients well tended and without bedsores. In the smaller hospitals classification of the patients was impossible, and we saw babies and young children in beds side by side with senile dements.

In their quiet endurance and their efficiency, as in their triumph over discouraging circumstances and lack of proper equipment, the nurses recalled the virtues of their fathers in the rank and file of the county regiments who held the trenches in Flanders in the campaign of 1914–18 and saved Europe. Certainly by their work they have delivered the hospitals of this country from chaos, for if the infirmaries fail the work of the general hospitals will be speedily stifled by the accumulation of cases of chronic sickness in their wards.

Rivers of ink have already flowed into the sterile sands of controversy about the nursing problem and I do not wish to add to them. I confine myself to the statement that the work of nursing in the hospitals of this country is most inequitably distributed; that a disproportionately heavy burden is borne by the staffs of the institutions for the chronic sick; that, despite neglect and poor equipment, the most heavily burdened have done their work efficiently and humanely, and their triumph owes little to theoretical instruction, academic distinction, or flowers and shampoo-rooms in the nurses' homes.

These simple facts should be considered by those whose duty it is to shape the future of nursing. Kindness, courage, practical resource, and patient endurance of the routine of daily work are qualities more valuable in nurses than a superficial knowledge of the intricacies of anatomy and physiology. It may be that the pursuit of a high average of academic attainment for State-registered nurses is a mistake. It might be better to select a small number for intensive training for positions of responsibility as sisters, matrons, and administrators and to rely more on character and practical work in the wards as the test for registration for the great majority. Unless some change is made it is certain that for many years defects of primary education will exclude a large number of excellent and intelligent nurses from the ranks of the registered. In any event the condition of the sick in the infirmaries demonstrates the foolishness of the contention that the measure of the efficiency of the nursing staff is the average duration of the stay of the patients in hospital.

The recently published Report of the Working Party on the Recruitment and Training of Nurses is not a distinguished document, but paragraph 247 deserves notice for its almost incredible stupidity. It runs: "It is clear that for some time to come, owing to the shortage of trained staff, it will be essential to continue to use the services at least of those assistant nurses now recognized and employed. Such evidence as we have been able to obtain points to the fact that useful service can be rendered in the nursing of mental and tubercular patients and probably also of fever patients and the chronic sick by persons who are not fully trained nurses." For many years four out of five nurses responsible for the care of the chronic sick have not been fully trained. I have paid my tribute to their skilful and devoted work and hope they will not be distressed by this slighting reference in the report.

Tentative Conclusions Based on Pilot Survey

Our preliminary survey was undertaken to discover whether improvement in the staffing and equipment and the application of the standards of investigation and

RELATIVE AGE DISTRIBUTIONS OF PATIENTS IN WESTERN ROAD INFIRMARY

CHART 1

treatment of a good general hospital would be likely to ameliorate the condition of the chronic patients to such a degree that they would be able to return to their own homes. We were soon convinced that improvement of that extent is quite impossible for the great majority, although a number might be made fit enough for transfer to institutions in which a more active and congenial life is possible than in a hospital for the chronic sick.

The reasons for that discouraging conclusion are three. First, nearly all the patients are the victims of pathological conditions which are either degenerative or genetic in their origin and beyond the scope of therapeutics in its present stage of development. Secondly, long confinement to bed without occupational or diversional therapy, without massage and passive movement in hospitals so grossly understaffed that independent activity of any kind has been discouraged for fear of accident, has led to rapid deterioration in the shape of contractures, deformities of the feet, and the development of incontinence. Thirdly, and probably the most important, is the subtle disintegration of human personality that is so common in these patients. Many literally do not wish to leave the beds in which they have lain so long; several refused admission to my wards in the General Hospital for the reason that if they were cured they might be compelled to leave the infirmary and resume the struggle of life alone. Like T. S. Eliot's women in the Cathedral at Canterbury, they did not wish anything to happen: they wished to be left to perish quietly. We had to comfort others by telling them that we had no intention or desire to discharge them before they would consent to give a history or co-operate in examination. Whether the establishment of homes in which a certain amount of nursing and domestic help is provided would encourage many of these patients to leave the infirmaries willingly is a matter to be decided by trial. I am not very hopeful of the result of such an experiment. I feel that most of the inmates in the chronic wards must be regarded as a sad inheritance from a long period of neglect—like many of the deteriorated patients in the mental hospitals—and that the opportunity for effective treatment has long since been lost.

At this stage it was clearly necessary to check the accuracy of our impressions by reference to statistical control. My colleague, Professor T. McKeown, of the Department of Social Medicine, with one of his senior lecturers, Dr. C. R. Lowe, came to our help and devised record forms suitable for mechanical sorting and analysis. The students of the University of Birmingham made us a grant of £1,000 to pay the cost of the investigation. At a later date Birmingham Regional Hospital Board, at the suggestion of the Hospital Management Committee at Stoke-on-Trent, sanctioned a similar survey in the Potteries, and soon we hope to arrange another in the rural peace of Herefordshire. The final figures will be published independently from the Department of Social Medicine, but by the kindness of Dr. Lowe I am able to present the results of a pilot survey, based on a preliminary analysis of the records of 714 patients—318 male and 396 female.

Age, Mobility, and Mental Condition

The mean age of the males is 74 years and of the females 76; 92% of the males and 95% of the females are 60 years and over; 70% of the males and 71% of the females are over 70 years; and 27% of the males and 37% of the females are 80 or over (Chart 1). The largest ten-yearly group for men is from 70 to 79 years and for women from 75 to 84; both these groups are 43% of the respective totals. Clearly the outstanding characteristic of the patients in this infirmary is advanced age.

Of the 714 patients 394 were completely bedridden (49% of the males and 60% of the females); of the remaining 320 only 56 men and 13 women were fit enough to venture out of doors.

At the time of the survey we judged that all but 5% of the bedridden were beyond hope of rehabilitation, but unfortunately it was impossible to determine accurately what their condition had been at the time of admission. We believe that their complete disablement has been in some measure due to continued rest in bed and to a large degree has been aggravated by it, because later we found suggestive evidence that a considerable proportion of the patients had been admitted from their homes simply as a consequence of some domestic upheaval and not on account of deterioration of their condition.

Sixty-three per cent. of the men and 52% of the women were reported to be "occupied" in the sense that they would occasionally read, write, knit, or help in the ward. My own observation, already recorded, suggests that this estimate is excessive. In Affleck's survey at Leeds he included 788 patients in five separate and much smaller hospitals; their age distribution and rough clinical classification corresponded well with ours, but the proportion of bedridden was much lower (in Leeds 33.9% of the males

and 41.7% of the females). Affleck does not give any figures of the nursing staff available, and it may be that the difference between the two groups was due to greater activity in Leeds than was possible in the wards at Birmingham.

Mentally we classified 32% of the males and 39% of the females as abnormal and in so doing ignored senile forgetfulness, irritability, and other minor manifestations of elderly decrepitude; we considered 25% of all the patients certifiably insane. These figures are in exact agreement with Affleck's estimate of 37.3%, and give further support to the explanation suggested by Lewis (1946) of the difference between the first admissions to English and American mental hospitals of patients over 65 years of age. The difference is not in the incidence of psychosis but in the method of dealing with it. In England a large proportion of these cases are cared for in the hospitals for the chronic sick, and in America they are in the mental hospitals. In England many patients thus escape the statistical analysis of the Board of Control.

Affleck believes that the vast majority of the mental disorders among the chronic sick are organic in basis, although he admits the possibility of the importance of functional elements derived from hopelessness and lack of interest. The reason for his belief is the undoubted fact that in nearly all these cases it is easy to elicit evidence of somatic disease such as arteriosclerosis, cerebral thrombosis, and cardiac insufficiency. On the other hand, in ordinary clinical practice cases of that type are common with no evidence whatever of mental failure.

I confess that I am left with the uneasy suspicion that much of the psychiatric disorder in the institutions for the chronic sick may be the result of their apathy and routine; no dogmatic statement, and indeed no opinion, is justified at the present time. What is needed is a systematic study of the mental and physical condition of the patients at the time of their admission to the infirmaries and of their subsequent progress. Such study has hitherto been impossible because the institutions for the aged and chronic sick have been neglected by both physicians and psychiatrists and because their staffs have been too small and too overburdened with routine work to undertake it.

Marital Status

Of the men 58% are widowers, and of the women no less than 73% are widows. Both these figures are significantly higher than those for similar age groups in the general population of Birmingham. The proportion of the unmarried in the infirmary is also higher than outside. The result is conveniently illustrated in Chart 2, which shows that, if a man or woman is married and the mate survives, the risk of ending his or her days in an infirmary is considerably reduced—a conclusion that may bring comfort to those who worry about the social institution of marriage. In Leeds only 34.5% of the men were widowers and 59.3% of the women widows.

Duration of Stay

The mean duration of stay for males was 34 months and for females 37 months (the range in both sexes from 0 to 18½ years); 26% of the men and 28% of the women had been in the infirmary for more than three years; 71% of the women and 62% of the men had been there for a year or more. These figures do not represent the work of the infirmary accurately; they leave an impression of a slow drift to inevitable death over a period of many months, and this is far from the truth. During 1948, for instance,

MARITAL STATUS (Patients 65 years and over) compared with 1939 National Registration, Birmingham.

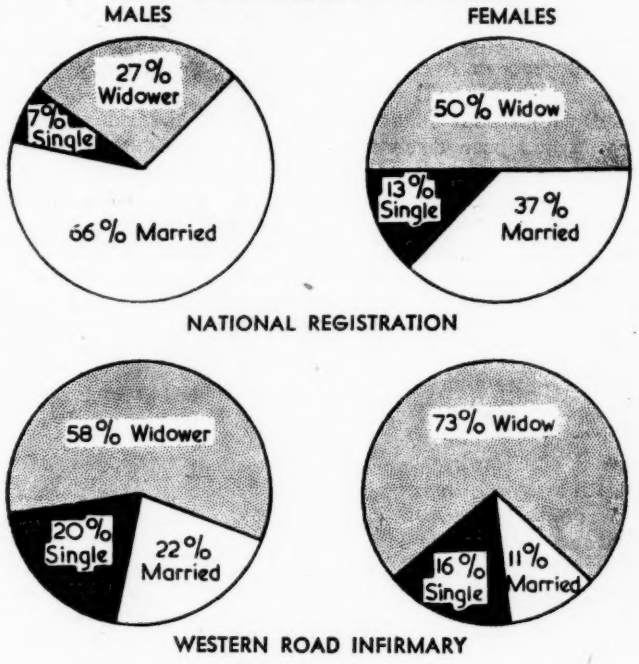

CHART 2

there were 958 deaths in the institution; of these 656 (68%) occurred within 100 days of admission and no fewer than 548 (57%) within 50 days; only 12% of those that died had been in Western Road for two years or more. Clearly an important part of the work was the treatment of acute illness in old people, and we decided to investigate this aspect of the problem more closely by reviewing the subsequent history of every patient admitted during one year. Mr. Broad, the clerk in charge of the records at the infirmary, who had already supplied us with the figures relating to the deaths in 1948, undertook the formidable task of preparing a summary of the case histories of 2,478 patients admitted between Jan. 1 and Dec. 31, 1946 (Tables I and II and Chart 3), and Dr. Padley has provided me with the following analysis:

TABLE I.—*Admissions, Western Road Infirmary, 1946*

Age	Males	Females	Total
Under 50	260 (17·7%)	124 (12·3%)	384 (15·5%)
50–59	199 (13·5%)	75 (7·4%)	274 (11·1%)
60–69	357 (24·3%)	218 (21·6%)	575 (23·2%)
70–79	493 (33·5%)	384 (38·1%)	877 (35·4%)
80+	161 (11%)	207 (20·5%)	368 (14·9%)
Total	1,470	1,008	2,478

TABLE II.—*Fate of Patients Admitted in 1946. Period of Follow-up 26 Months*

	Males	Females	Total
Died:			
In less than 4 months	437 (29·7%)	355 (35·2%)	792 (32%)
In 4 to 26 months ..	115 (7·8%)	82 (8·1%)	197 (7·9%)
Discharged:			
In less than 4 months	784 (53·3%)	385 (38·1%)	1,169 (47·1%)
In 4 to 26 months ..	93 (6·3%)	103 (10·2%)	196 (7·9%)
Survived	41 (2·8%)	83 (8·2%)	124 (5%)
Total	1,470	1,008	2,478

Months are lunar months of 28 days.

The fallacies attending conclusions drawn from a survey of patients within a short period of time are at once apparent, because large numbers of chronic patients will

accumulate over years and distort the picture of the work done. More detailed analysis yielded some interesting results: (1) Men are admitted to the infirmary at an earlier age than women; only 44% of male admissions are 70 years or over, whereas 58% of the females are of that age group. (2) No less than 32% of all admissions died within four lunar months and in the same period 47.1% had been discharged. (3) In 26 months a further 15.8% of the patients either died or were discharged (7.9% in each group). (5) Only 5% of the total admissions survived 26 months or more, and in this group the proportional survival of women was three times greater than that of the men (8.2% as against 2.8%). To adopt a simile suggested by Lancelot Hogben—the patients entering an infirmary are like a crowd of old people passing slowly through a gate into a long avenue. Within four months more than three-quarters have left the avenue either by death or by return to their homes. In two years 19 out of 20 have gone and only a few remain passing through the shade: these stragglers may long survive, and their accumulated numbers at a given moment of time give a false impression of the true condition of life within the grove.

TABLE III

	Western Road, Birmingham	Orsett Lodge, Essex
Total admissions in one year	2,478	1,430
Aged 60 years and over ..	1,820 (74%)	780 (55%)
Under 60 years	658 (26%)	650 (45%)

TABLE IV

	Western Road, Birmingham	Orsett Lodge, Essex
Total admissions	1,820	780
Died	902 (49%)	296 (38%)
Discharged	807 (44%)	284 (37%)

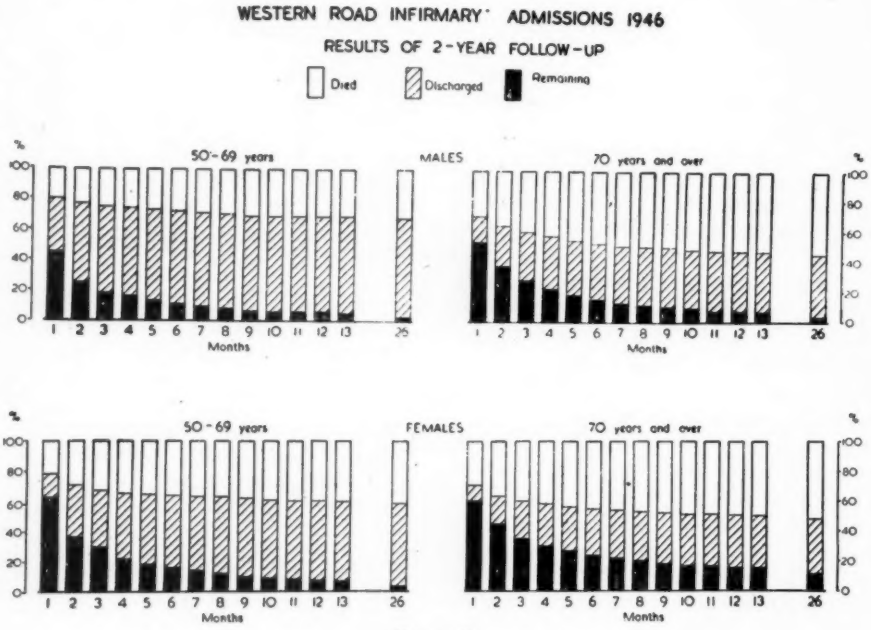

CHART 3

A hospital for the chronic sick is a bad description of Western Road Infirmary, and I suspect for many others. Most of the patients admitted are acutely ill, and their treatment is undertaken in an institution without a laboratory or radiological department and with a staff so small that it is remarkable that the treatment and the nursing were as good as we found them to be. It is true that the clinical and laboratory staff at Dudley Road Hospital, close by, had given all the help that lay in their power, but it would not be candid to pretend that the arrangements were satisfactory. The taking of a radiograph involved a journey of half a mile, and many of the patients were unfit for such adventure; in any event the radiological department was too small for the needs of the acute hospital and desperately overworked. The difficulties of laboratory investigation by messenger and transport of specimens need no elaboration.

I have compared Dr. Nagley's results at Western Road with Mr. Cosin's (1948) at Orsett Lodge Hospital, in Essex. At Western Road the number of admissions was greater than at Orsett and the proportion of older patients was also larger (see Table III). Cosin does not deal with the fate of the patients under 60, and a comparison of those over that age gave the result shown in Table IV. It seems likely that the greater proportion of deaths at Western Road was due to the greater age of the patients. What is surprising is that the ratio of discharges to admissions in this age group was also larger in Birmingham, because at Orsett there was an active department of physiotherapy and there was none at Western Road. The inference is that the discharge of an elderly patient from an infirmary depends more on the condition of his home than it does on the attention of a masseuse.

Prelude to Admission

No less than 77% of all the patients were admitted direct from their own homes; not more than 18% had passed through a general hospital, and of this number one-sixth had passed through the general hospital in a technical sense only — that is, they had been sent on to the infirmary from casualty and out-patient departments and had not been in the wards. In brief, six out of seven patients had been admitted to this understaffed and ill-equipped institution without adequate investigation or treatment. To the credit of the general practitioners of Birmingham it should be recorded that in more than one-half of the patients admitted to the infirmary under the age of 60 years some form of laboratory or other investigation had first been undertaken in the difficult circumstances of their own homes. The figures are in striking contrast with those from Leeds, where it is stated nearly all had been thoroughly examined in hospital.

A study was made of the medical and nursing attention required by individual patients at the date of admission, and it was found that in 33% all that was needed was a visit from a doctor once a month; this group had no skilled nursing of any kind at home, and it was clear that the only reason for their entrance to the infirmary was some sort of domestic catastrophe such as the death of a spouse or friend or illness of the person who had previously cared for them. These cases are entirely a social problem; for the most part they needed only help in their houses or untrained attention to their physical disability. The estimate of 33% is a conservative one; when there was any doubt about a particular case it was excluded from the group. It was clear that many of these patients had

deteriorated in the infirmary—a consequence, we believe, of the prevailing apathy and of prolonged rest in bed. That so large a proportion as one-third of all the patients had been admitted without disability sufficient to require admission on medical grounds lends support to the suggestion of Brooke (1949) that social services organized by the hospital to care for the elderly in their homes might save many of them from the last dreary journey through an infirmary to a squalid tomb.

Investigations at Highbury, a home for 270 old people in Birmingham under the administration of the local authority, warranted the same conclusion. In this institution the mean age of the patients was 78, higher than it was in the infirmary, and they were living a much more active and pleasant life at a weekly cost of less than half that of an infirmary bed. Had this home not existed we were satisfied that a very large proportion of its inmates would have required accommodation in an infirmary. There is some dispute about the proper size of such homes, and the National Corporation for the Care of Old People favours small ones for 25 to 30 residents. The master and matron of Highbury were convinced, on the other hand, that in large cities homes for old people should ideally have about 400 beds, and that most of these should be in small separate rooms, some with two beds for married couples.

When I asked whether the provision of separate rooms would not make the cost of domestic service prohibitive they replied that, on the contrary, it would solve the problem, because nearly all the old people would keep their own room spotlessly clean without help, but many of them resented cleaning part of a dormitory. Their main arguments in support of their preference for the large home were that the old people of the cities liked the atmosphere and bustle of a crowd, that communal entertainment in the shape of films, discussions, and stage shows was much more easily and better organized than in the small homes, and that the feeding would be better and more economically done.

Attitude to Leaving the Infirmary

One-third of all the patients were unwilling to leave the infirmary in any circumstances; as I have already said, the mere suggestion that they might be made well enough to do so distressed them seriously, and we found that this frame of mind was directly related to the duration of their stay in the institution. Thus, within the first three months of their admission 65% of the men and 71% of the women are eager to return home, but after four years the figures fall to 45% of the men and 28% of the women, and I am sure that the fall would be even greater if the patients were actually confronted with the opportunity of leaving. In part this reluctance to leave is due to the disintegration of their homes, for we found that more than half (57%) of all patients had no home of any kind to which they could go if they were discharged. Of the 270 patients with a home available to them less than a half (44%) could expect any form of help in the house, and more than one-half (56%) would either be compelled to live entirely alone or in a house deserted during working hours.

It is significant that during the first three months of their stay 71% of the males and 51% of the females have a home to which they would be welcome on their return; thereafter the home and family background progressively recedes and after four years only 24% of the males and 13% of the females have any sort of home available to them. Manifestly the cohesion of the homes of the elderly is fragile: absence for more than three months is sufficient to damage it; in four years more than three out of four of their homes have vanished. Two problems emerge clearly from this analysis: the first is concerned with the maintenance of the elderly home, and the second is that of provision of adequate treatment and social help for the old when they fall sick.

Factors Affecting the Cohesion of the Home

Psychologists and social anthropologists agree that the forces which promote cohesion in a group are derived from fundamental instincts modified by habit and custom and, to a very slight degree, by rational considerations. The instincts are of two kinds—the self-regarding and the group-maintaining: the first are the instincts of self-protection, sustenance, and assertion, and the second those of mating, nursing, and the herd. At the most primitive level these instincts were satisfied by the organization of society in family groups, but the passion and pugnacity inseparable from mating led to the institution of exogamy to avoid the internecine strife that ensued from sexual selection within the family. Exogamy established the tribe as the social unit; conquest and enslavement of the conquered made the nation. The discipline of law with the habits and customs that it implies maintains the cohesion of a people so long as the makers of the law are wise enough to see that its system does not conflict unduly with the fundamental instincts that lead to the development of society or with its interests.

It is the opinion of many with long experience of the work in institutions for the chronic sick and aged that the sense of family unity and responsibility is weakening, and that people in this country are less interested than they were in the fate of their elderly and disabled relatives. We are also told that parents to-day are not as willing to sacrifice personal comfort and pleasure in the interests of their children, and that many children at the age of puberty or soon after lose all sense of responsibility and affection for their family.

Accurate estimation of the value of evidence of this kind is difficult, because it emanates from those whose work constantly brings them face to face with the tragedy of the broken home and their judgments may be unduly melancholy. Sheldon's (1948) report on the old people of Wolverhampton shows how ardently the flame of family affection may burn despite discouraging circumstances, and suggests that the evidence should be accepted with caution. It would be unwise, however, to neglect it, for it comes from many sources and its volume is increasing.

The loosening of the ties of English family life and the rapid increase of divorce attracted serious attention in 1918 at the end of the first world war and have become more pronounced during the past 30 years, especially in the period of the second campaign.

Disruption of a family by conscription and long terms of separation inevitably diminished cohesion; so did unemployment and the application of the means tests in the uneasy period of truce. During the industrial depression many a father found his dignity and authority as the main support of a family replaced by a sense of ignominious dependence on the earnings of children, who sometimes resented the burden of the maintenance of their parents' home.

The deplorable condition of houses and their overcrowding made the position of sick and disabled members of a family increasingly difficult, and the burden of their care in restricted accommodation seemed intolerable. Many social workers regard this factor as the predominant one, and it is often pressed in argument by those who seek a bed in an institution for a dependent relative. It cannot,

however, be alone responsible for the increased demands on the infirmaries, because, first, the overcrowding of houses is less than it was 50 years ago, when the average size of families was larger, and, secondly, applications for institutional provision often come from those who cannot reasonably claim that their housing accommodation is unsatisfactory. It is difficult, too, to induce families to take back their relatives when new houses are available to them. Clearly there is now less reluctance to seek the aid of public assistance in solving the problems of family life. The administration of the infirmaries has become more sympathetic and humane, the horror of the Victorian union is no longer so deterrent, but it is also possible that slackening of the moral fibre of the family and a demand for material comfort and amenity outweigh the claims of natural affection.

A shorter working week for men has encouraged the employment of women in industry; homes therefore have less attention at a time when they are difficult to run. For the same reason domestic service is almost unobtainable and local authorities are unable to recruit "home helps" to care for the sick and aged in their houses.

It may well be, therefore, that the weakening of family cohesion which so many observers claim to have detected is in part a result of the trend of recent legislation. As a contribution to the study of this social problem we investigated the frequency of visiting at the infirmary, with the following result. Eighty-two per cent. of the men and 79% of the women are visited at least once a week for the first three months of their stay; thereafter the frequency of visits declines steadily, but it is not until four years have elapsed that the total of weekly visits falls to 40% for the men and 46% for the women.

Irrespective of the duration of stay of the whole sample of 714 patients, no less than 52% of the males and 68% of the females are visited by friends or relatives once a week; only 48 men (15%) and 28 women (7%) are never visited. The remainder were visited at intervals greater than a week.

In view of the depressing environment of the infirmary, of the unpleasant nature of many of the disabilities in the patients, and of the difficulties of travel, these figures show that even if natural affection has declined, as some believe, it is still a potent influence in the social life and conduct of the English. Curran *et al.* (1946) reached the same conclusion in Glasgow, and it must never be forgotten that at least 95% of the aged never go into an institution: with the help of their families and friends, or more rarely alone, they struggle on to the end.

Indisputably necessary as it was to do something to improve the material standard of life of the people, it must always be remembered that it is possible to do too much. Freedom from tyranny, from poverty and want, from the fear of unemployment, and from the hopeless despair of unattended and persistent sickness is no doubt desirable, but whether it is good to achieve it without effort on the part of the individual or his family—to have it, as it were, "laid on" by the State—is questionable, and the matter is more commonly decided by an appeal to sentiment or self-interest than by reason.

The instincts of self-protection, sustenance, and assertion imply struggle to satisfy them, and if society makes the struggle unnecessary the vitality and survival value of its individual members will diminish. Similarly, the power of the group-maintaining instincts will suffer if the provision of a home, the training of children, and the care of its disabled members are no longer the ambition of a family but the duty of a local or central authority.

In these debatable matters a decision requiring high qualities of statesmanship is necessary before new plans are made to deal with the problems of the chronic sick and infirm. The problem is simple. Shall they become the responsibility of society in large institutions or should we encourage their friends and their families to care for them whenever possible?

In the interest of social cohesion psychology and anthropology favour the second course, and so does ethics, and, while it has been the constant aim of religion and morals to extend the affections of the individual beyond the range of his personal and group relations, both agree that such extension must be based on a lively sense of responsibility for the weaker members of the family and on service to them. Aesthetics in days of realism is often confused with sentiment, but there is a beauty and a value in personal service to a crippled friend or relative that no hospital can rival. Claims of expediency and economy may be vulgar, but they are insistent, and the fact that care of the sick and disabled in their homes is cheaper than in institutions is worth emphasis.

For all these reasons, and to avert the distressing disintegration of human personality that is so common in patients who lie for years in an infirmary, it would be wiser to endeavour to preserve the sense of family responsibility and to encourage people to tend their own sick and guard the aged.

That does not mean that families should be expected to bear the whole burden. Society must help them, and the problem really hinges on the type and extent of assistance to be provided. Institutions will always be necessary, but the aim should be to reduce the demand for them, and the measures to be adopted must not conflict with the claims of human instinct or with the principles of ethics, morals, and religion.

(A list of references will appear at the end of the second lecture, which will be published in our next issue.)

A memorandum prepared by the Minister of Health's Standing Advisory Committee on Cancer and Radiotherapy and endorsed by the Central Health Services Council has just been issued for the general guidance of regional boards and boards of governors. The memorandum suggests that no recognition should be accorded to "cancer" as a specialty in itself. To secure full efficiency a cancer service should provide a single organization to serve a population of the order of two million to four million. The area served should normally, but need not necessarily, be coterminous with that of a regional hospital board. Each cancer service should have a co-ordinating committee, appointed jointly by the regional hospital board and board of governors, concerned with the allocation of work to hospitals, records, follow-up, transfer of patients, provision of equipment, and other matters. It should include representatives of the university and medical school, and should have the advice of local health authorities and of a professional and scientific subcommittee including representatives of the universities and the appropriate medical school, medical officers of health, and general practitioners. Facilities for preliminary consultation should be established at an adequate number of recognized peripheral hospitals, which should be visited regularly by specialists for consultation with the general practitioner and local staff to assist in preliminary diagnosis and for follow-up. Similar facilities should exist in all units of the organization. The co-ordinating committee should advise on the selection from among the physicians, surgeons, radiotherapists, and other specialists on the staff of hospitals in the area of those who are to form the headquarters staff of the cancer service. Treatment by radiotherapy should be under the control of specialists engaged solely in that work.

EFFECT OF LOW TEMPERATURES ON THE BITTNER VIRUS OF MOUSE CARCINOMA

BY

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In the *British Medical Journal* of March 26 (p. 511) appeared an Imperial Cancer Research Fund lecture by Professor W. E. Gye dealing with the propagation of mouse sarcomas by means of frozen and dried tumour tissue. The experiments described make it clear that by refrigeration and subsequent drying at a low temperature the tumour cells can be killed and an active agent liberated which is capable of starting tumours afresh, and which, judging from those of its properties so far known, is viral in nature. This holds good for both chemically induced and spontaneous sarcoma in mice, so that we can regard the virus as the continuing cause of sarcoma (i.e., the agent which is responsible for the continuing cell division), while the chemical in those tumours apparently started by it acts as the inciting cause, allowing of, or producing, the change in the virus from the latent to the active form.

This sequence of events can be closely paralleled by what is already known to be true of mammary adenocarcinoma in mice. Bittner and his co-workers in the United States have shown that these tumours have for their continuing cause a virus (the Bittner milk factor), but that this virus requires a chemical inciter (oestrin) before it can change from the latent to the active form and produce a cancer. This virus, of which the active form can be seen in the tumours with the electron microscope (Porter and Thompson, 1948) is present in the milk of lactating female mice in the latent form and enters the bodies of the young mice as they suckle, especially if the milk is drawn into the respiratory passages (Begg, 1949). Here it circulates throughout the life of the mouse, reaching every organ which has a blood supply (Woolley, Law, and Little, 1941), but because of its high tissue specificity it is capable of producing tumours only in mammary cells and then only in the long-continued presence of oestrin.

In the male mouse, mammary tubules, imperfectly developed and without secreting acini, are present over large areas of the subcutaneous tissue, but even in high cancer strains male mice do not develop mammary cancer unless they are subjected to prolonged treatment with oestrin, when tumours occur as in the females—i.e., the virus changes from the latent to the active form. Hitherto no method of obtaining the active form of the virus outside the body or apart from living tumour cells has been discovered. That obtained free in milk is naturally in the latent form and is carcinogenic only after long-continued action of oestrin.

In the present experiments, however, it has been shown that by freezing mammary carcinoma tissue at −79° C. for long periods the tumour cells are killed and the Bittner virus liberated in its active form. It is then capable of initiating new tumours in male mice without oestrin as readily as in female mice, but only when injected into mammary tissue, thus demonstrating its selective infectivity. That these tumours produced with refrigerated tissue are not transplants but are true new infections is also demonstrated by the fact that there is an increase in the percentage of tumours obtained the longer (within limits) the tissue is frozen. This suggests the slow liberation of the active virus and also perhaps the denaturing of an inhibitory substance by cold. Such inhibitory substances have already been demonstrated in the Shope papilloma and carcinoma of rabbits and in sarcomas of chickens. The present experiments were done with both sporadic mammary cancers of inbred mice and with the "63" carcinoma (Bashford's adenocarcinoma) of the hybrid M.R.C.–Hunt strain. Roughly equal numbers of males and females were used.

I. Experiments with Frozen Carcinoma Tissue Inoculated Subcutaneously in Male and Female Mice

The technique followed was that worked out in the Imperial Cancer Research Laboratory for the transmission of sarcomas. The tumour tissue was removed aseptically from the freshly killed mouse and minced finely in a Craigie mincer (Craigie, 1949). This alone should reduce its transmissibility, since mechanical disintegration of carcinomas was shown by Jensen in 1903 to reduce transplantability. It was then diluted with an equal volume of 5.3% dextrose solution in most cases and drawn up into a 5-ml. syringe, from which it was run into sterile ampoules (1 ml. in each). These were sealed, cooled rapidly to −79° C. by immersion in a solution of solid CO_2 in "cellosolve" (ethylene glycol monoethyl ether, B.D.H.), and stored in a "deep freeze" storage cabinet kept at −79° C. From this one ampoule at a time was removed as required. The contents were just thawed and, as soon as fluid, were drawn up in a small syringe and inoculated subcutaneously in the right mammary region of mice of the same strain as the tumour. The average dose was 0.05 to 0.1 ml. per mouse, which represents 0.025 to 0.05 ml. of tumour mince. It was noticed that the frozen tissue underwent a physical change, becoming more homogeneous, softer, and slightly sticky on prolonged freezing. This change also occurs in long-frozen sarcoma tissue.

The mice were then examined at intervals of three to four days and the time of definite appearance of tumours noted. Although the mice all came from high cancer lines they were used before they were old enough to develop sporadic tumours, and in all cases the tumours obtained were at the site of inoculation. It is to be remembered that when carcinomas are obtained in male mice known to carry the Bittner virus, by painting with oestrin, the tumours appear in a haphazard distribution and not at the site of painting.

Table I shows that 239 mice were inoculated and 154 tumours obtained. Tumours were obtained with equal ease in male and female mice, and the occasional omission of dextrose seemed to make no difference. The time of appearance of the tumours was related to their rate of growth; rapidly growing tumours appearing often within 10 days, and slowly growing ones being delayed from seven to 12 weeks. The stable "63" tumour appeared fairly constantly at four weeks, some mice in each batch showing it a little later or earlier than this.

If these figures are examined statistically it becomes apparent that there is a slight increase in virulence the longer the tissue is frozen. Thus, if the experiments are broken up into groups the percentages of "takes" shown in Table II are obtained. This is consistent with the gradual freeing of virus particles from an inhibitory substance, protein in nature, by continuing cold, and is not suggestive of survival of intact tumour cells. The arguments against cell survival on freezing to −79° C. in the case of sarcoma tissue have already been stated in other papers (Gye, Begg, Mann, and Craigie, 1949), but

TABLE I.—*Frozen Carcinoma Inoculated Subcutaneously*

No. of Expt.	Strain	Tumour	Diluent	Time Frozen		Inoculated	Tumours	Time of appearance
M77	MRC/H	63	Dextrose	15 min.	1	6	3	4 weeks
M78	R III	Sporadic	"	15 "		6	3	4 "
M70	MRC/H	63	None	15 "		6	3	3 "
M60A	"	"	Dextrose	1 hour	2	6	1	3 "
M65	"	"	"	1 "		6	4	3 "
M60A	"	"	"	3 hours	3	6	1	4–5 weeks
M65	"	"	"	3 "		6	1	3–4 "
M60A	"	"	"	6 "	4	6	4	5 "
M65	"	"	"	6 "		6	4	4–6 "
M65	"	"	"	9 "		6	3	5 "
M60A	"	"	"	12 "	5	6	1	5 "
M65	"	"	"	12 "		6	2	4 "
M60A	"	"	"	24 "		6	0*	5 "
M65	"	"	"	24 "		6	3	—
G3A	R III	Sporadic	"	24 "	6	5	5	4 weeks
G3B	"	"	"	24 "		5	5	11 days
G3B	"	"	"	24 "		6	6	10 "
M53	S/A	"	None	24 "		4	4	11 "
M60A	MRC/H	63	Dextrose	2 days		6	5	4 weeks
M65	"	"	"	2 "	7	6	2	4–6 "
G3C	R III	Sporadic	Dext.-cysteine	2 "		6	6	3–4 "
G3D	"	"	Dextrose	2 "		6	6	3–4 "
M65	MRC/H	63	"	4 "		6	2	3 "
M65	"	"	"	7 "	8	6	4	3–6 "
M53	S/A	Sporadic	None	7 "		8	7	2–6 "
G3E	R III	"	Dextrose	12 "	9	6	5	4 "
G3F	"	"	Dext.-cysteine	12 "		6	6	3 "
M53	S/A	"	None	14 "	10	8	7	3 "
M65	MRC/H	63	"	14 "		6	0†	5 "
M57	S/A	Sporadic	"	21 "		4	4	—
M72	MRC/H	63	Dext. added on thawing	26 "	11	3	0†	2 weeks
M57	S/A	Sporadic	None	28 "		4	4	—
M57	S/A	"	"	35 "		4	4	3 weeks
M74	MRC/H	63	Dext. added on thawing	37 "	12	3	1	3 "
M57	S/A	Sporadic	None	42 "		4	4	4 "
M59	MRC/H	63	"	55 "		6	3	3 "
M86	R III	Sporadic	Dextrose	82 "		3	3	2 "
G25	MRC/H	63	"	97 "	13	3	2	1 week
M90	R III	Sporadic	"	99 "		3	2	13 days
G21	C3H	"	"	113 "		3	2	9 "
M58	"	"	"	118 "	14	6	3	2 weeks
M63	"	"	"	119 "		3	3	7 "
M64	S/A	"	"	121 "		3	2	7 "
G8A	R III	"	"	138 "	15	6	6	12 "
G8B	"	"	"	138 "		4	5‡	2–3 "
M90	S/A	"	None	182 "		3	3	2–3 "
								9 days

* Technical error. † ? error. ‡ Two inoculations in one mouse.

statistical proof by numbers of successful inoculations is not so readily obtained in the case of the sarcomas, since the phenomenon of selective infectivity is not shown by them (see later), and tumours are obtained in practically 100% after freezing for any time after 15 minutes.

TABLE II

Time Frozen	No. Inoculated	No. of Tumours	Successes
15 minutes to 12 hours	72	30	41%
24 hours to 7 days ..	76	55	72%
12 to 182 days ..	91	69	75%

By application of the χ^2 test to the figures in Table I it appears that there is an enhancement of the effect of cold up to 48 hours, but this is less marked later. In these calculations the three experiments with entirely negative results have been omitted, because it is very likely that they were due to a technical error (probably thawing to too high a temperature or leaving too long after thawing before inoculating). In making calculations the readings have been arranged in 15 groups, as shown by the brackets in Table I. The value of χ^2 for the first seven readings is 12.145 with 6 degrees of freedom, which is greater than the value of χ^2 for which P is 6%. The value of χ^2 for the remaining eight readings is 2.444 with 7 degrees of freedom, which is less than the value of χ^2 for which P is 95%. This is compatible with an increase in virulence during the first 48 hours—i.e., during the death of the cells—and a stabilization later. It must be realized that the experiments were not designed for statistical analysis, and no claim is made that the statistical approach offers final proof of the increase in virulence. It does, however, afford ancillary confirmation, and suggests a rational design for future experiments. The calculations are shown in Table III.

TABLE III

No. of Reading	Total	Observed o	Expected e	$\frac{(o-e)^2}{e}$	
1	18	9	10·62	0·247	
2	12	5	7·08	0·611	
3	12	2	7·08	3·644	χ^2 = 12·145
4	12	8	7·08	0·119	with 6 degrees
5	18	6	10·62	2·009	of freedom
6	26	23	15·34	3·861	
7	24	19	14·16	1·654	
8	20	13	15·92	0·555	
9	12	11	9·55	0·220	
10	8	7	6·37	0·062	χ^2 = 2·444
11	8	8	6·37	0·417	with 7 degrees
12	17	12	13·53	0·173	of freedom
13	12	9	9·55	0·031	
14	12	8	9·55	0·251	
15	14	14	11·14	0·735	

My thanks are due to Mr. Richard Gye for these calculations.

II. Experiments in Selective Infectivity

If inbred strains of mice are used tumour tissue can be successfully grafted in both subcutaneous and intraperitoneal sites. The new tumours are simply clumps of cells of the original mouse growing in the tissues of the new host. If, however, the active form of the Bittner virus has been obtained free from living mouse cells it seems highly probable that only cells of mammary tissue can be infected, and that connective-tissue cells cannot respond to it. Since it is well known that the mammary tissue of the mouse is very widespread, and that sporadic tumours can arise almost anywhere on the surface of the

TABLE IV.—*Frozen Carcinoma Inoculated Intraperitoneally*

No. of Expt.	Strain	Tumour	Diluent	Time Frozen	Inoculated	Tumours (Intraperitoneal)	Tumours in Abdominal Wall
M60A	MRC/H	63	Dextrose	1 hour	6	1	None
,,	,,	,,	,,	3 hours	6	None	None
,,	,,	,,	,,	6 ,,	6	None	1
,,	,,	,,	,,	12 ,,	6	None	None
,,	,,	,,	,,	24 ,,	6	None	None
M53	S/A	Sporadic	None	24 ,,	4	None	None
M60A	MRC/H	63	Dextrose	2 days	6	None	None
M53	S/A	Sporadic	None	7 ,,	8	None	None
,,	,,	,,	,,	14 ,,	8	None	None
M57	,,	,,	,,	21 ,,	4	None	1
,,	,,	,,	,,	28 ,,	4	None	None
,,	,,	,,	,,	35 ,,	4	None	None
,,	,,	,,	,,	42 ,,	4	None	None
,,	,,	,,	,,	55 ,,	6	None	1
M59	MRC/H	63	,,	118 ,,	5	2	1
M58	C3H	Sporadic	Dextrose	119 ,,	3	None	2
M63	,,	,,	,,	138 ,,	6	None	None
G8C	R III	,,	,,				

body, subcutaneous inoculation of active virus can never offer evidence for or against selective infectivity.

On the other hand, sporadic mammary cancer never arises inside the peritoneum, and yet successful intraperitoneal grafts of living tumour tissue can be easily obtained. If, therefore, frozen tumour tissue, which as we have seen readily produces subcutaneous mammary cancers, were inoculated intraperitoneally it should produce tumours if it contained living cells, and should not do so if it contained only active virus. In the experiments shown in Table IV it is obvious (by comparison with Table I) that a qualitative difference in results exists between subcutaneous and intraperitoneal inoculation of refrigerated mammary tumour. The number of failures is too high to be accounted for by any explanation other than the absence of mammary tissue in the site chosen.

The technique of intraperitoneal inoculation is difficult because of the ease with which a few cells from the surface may be carried into the deeper tissues by the needle and also because of the difficulty of avoiding contamination of the abdominal wall and subcutaneous tissues by the material in the needle during its withdrawal. This can be demonstrated in various ways. For example, the inoculum can be mixed with powdered charcoal and its position thus be rendered visible. Small particles of carbon are often found in the abdominal wall at the site of puncture. Again, microscopical examination of subcutaneous and intraperitoneal tumour grafts often reveals the presence of hair follicles which have been forced in by the grafting-needle. A further source of error is a slightly lateral inoculation. Unless the skin and the abdominal wall are pierced exactly in the midline there is always the risk of a mammary tubule being involved in the puncture.

In spite of these obvious sources of error it will be seen that out of 92 inoculations 83 were negative, and of the nine cases in which tumours were obtained six were in the abdominal wall at the site of inoculation and projected as masses of growth on both its superficial and its deep surface. These cases therefore prove nothing, since it is probable that the needle came in contact with a mammary tubule in its passage through the wall. In three of the cases intraperitoneal tumours were found apparently unconnected with any structure, but it is not possible to be certain that they were not originally attached to the parietal peritoneum at the site of needle puncture. In any case a failure to obtain growths in 90% of the intraperitoneal experiments as against a success in 75% of subcutaneous inoculations (where the chances of the virus encountering a mammary tubule are high but not even there 100%) is strongly in favour of selective infectivity of the virus as against cell survival.

Further evidence in this connexion is offered by the behaviour of refrigerated sarcoma tissue on subcutaneous and intraperitoneal inoculation. In both situations the percentage of "takes" is equally high, which suggests a qualitative difference between the carcinoma and the sarcoma virus, the one being adapted to mammary cells only, the other to connective-tissue cells, and therefore able to produce tumours in practically any situation.

Conclusions

The active form of the Bittner factor can be obtained by freezing mammary tumours at −79° C.

The activity of the refrigerated tissue increases rapidly in the first 48 hours and more slowly later.

The refrigerated tissue possesses selective infectivity for mammary tissue, thus differing qualitatively from living tumour cells, which can be grafted in any situation.

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EFFECT OF REPEATED FREEZING AND THAWING ON MOUSE CARCINOMA TISSUE

BY

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From the experiments described in the preceding paper (p. 251) we know that storage of minced mouse carcinoma at −79° C. for long periods does not destroy, but rather enhances, the power of such tissue to start carcinomas afresh when injected into mammary tissue. From those experiments it has been concluded that such "deep freeze" storage kills the cells and renders the Bittner virus available in its active form. The present series of experiments demonstrates that while practically all carcinomas yield active material after one period of freezing (be it for 15 minutes or six months) it is not so easy to produce tumours from material which has been frozen, thawed, and refrozen. In this respect the Bittner milk virus shows itself less thermostable than the sarcoma virus, which will stand repeated freezing and thawing.

TABLE A.—*Activity Only to First Thawing*

No. of Expt.	Tumour	1st Freeze and Thaw				2nd Freeze and Thaw				3rd Freeze and Thaw				4th Freeze and Thaw			
		Time Frozen	Inoculated	Tumours	Time of Appearance	Time Frozen	Inoculated	Tumours	Time of Appearance	Time Frozen	Inoculated	Tumours	Time of Appearance	Time Frozen	Inoculated	Tumours	Time of Appearance
M70	63 carcinoma ..	15 min.	6	3	3 weeks	15 min.	6	0	—	15 min.	6	0	—	15 min.	6	0	—
M77	" " ..	15 "	6	3	4 "	15 "	6	0	—	15 "	6	0	—	15 "	6	0	—
M96	" " ..	50 days	6	0	—	30 "	6	0	—								
M98	" " ..	94 "	6	0	—	25 "	6	0	—								
M78	R III sporadic ..	15 min.	6	6	5–6 weeks	15 "	6	0	—	15 "	6	0	—				
M90	R III sporadic derived from material frozen 138 days	99 days	3	3	4–5 "	15 "	Not tested			15 "	Not tested			15 "	6	0	—
M90	Strong A sporadic..	182 "	3	3	2 "	15 "	Not tested			15 "	Not tested			15 "	6	0	—
M91	R III sporadic treated with distilled water and dextrose	15 "	6	6	4 "	30 "	6	0	—								
M102	Strong A sporadic ..	15 min.	6	2	7–10 "	15 "	6	0	—	15 "	6	0	—				
M102	" " " ..	19 days	6	2	6–7 "	15 "	6	0	—	15 "	6	0	—				

These facts were first pointed out in 1930 by Cramer,* who showed that, while a mince of the cells of mouse sarcoma 37S could be frozen in CO_2 snow, thawed, and refrozen four times in succession without much loss of activity, the "63" carcinoma was always rendered completely inactive by four such freezings. He also showed that diminution of activity occurred even in sarcoma tissue if, after freezing, the tissue was warmed up in an incubator. From this and other experiments he concluded that a thermolabile agent (stable at low temperatures) might exist in sarcomata after the cells were killed by freezing. He also pointed out that if such an agent existed also in carcinomata its presence could not be proved or disproved by failure of frozen material to produce a tumour, since the carcinoma-producing agent would be tissue-specific and could at best give rise to tumours only when in contact with mammary cells. If it were also extremely thermolabile the odds would be that repeated thawings would render it practically harmless.

At the time of Cramer's work the only carcinomas readily available for study were tumours which had been grafted from mouse to mouse for many years. Now that we have a large number of sporadic carcinomas of the R III and Strong A strains, each of them showing slight individual differences of growth rate, though all of them are associated with the "milk factor," it seems of interest to study this problem afresh. A variety of sporadic R III and Strong A tumours were tested as well as the old strain, No. 63. While Cramer's results with "63" were entirely confirmed it was found that several, though not all, of the virulent sporadic tumours would stand a succession of changes of temperature from 2° to −79° C. and back again two or three times.

Out of 24 experiments, 22 of which showed activity of the tumour agent after a single freezing, 14 showed activity after further freezing and thawing. In 13† cases tumours were produced after a second thawing, in eight also after a third thawing. In no case did a tumour inactive after the second thawing produce a tumour after the third. In no case did a "63" tumour show activity after more than one freezing and thawing. The length of time of the first freezing made no difference to the number of tumours obtained, though they appeared earlier the longer the initial freezing. This is to be expected from the enhancement of virulence by long freezing shown in the preceding paper.

It is therefore to be concluded that the active agent of mouse mammary cancer suffers progressive deterioration on repeated freezing and thawing, but that individual tumours differ in this respect, some being completely inactivated by a second thawing, others rendered progressively less active.

Technique

Each tumour was minced in a Craigie mincer. It was diluted with a small amount of saline; glucose was not

*Cramer, W. "On the Possibility of Transmitting Mammalian Neoplasms Without the Intervention of Living Cells." Ninth Scientific Report of the Imperial Cancer Research Fund, p. 21, 1930.

†In one experiment the mice died of intercurrent infection before tumours could have appeared.

TABLE B.—*Activity to Second or Third Thawing*

No. of Expt.	Tumour	1st Freeze and Thaw				2nd Freeze and Thaw				3rd Freeze and Thaw			
		Time Frozen	Inoculated	Tumours	Time of Appearance	Time Frozen	Inoculated	Tumours	Time of Appearance	Time Frozen	Inoculated	Tumours	Time of Appearance
M91	Strong A sporadic M82	33 days	6	6	2–3 weeks	30 min.	6	6	4–5 weeks				
M91	R III sporadic from material frozen 138 days	112 "	4	4	1–2 "	30 "	6	5	2 "				
M96	As M91	125 "	6	6	2 "	30 "	6	5	2 "				
M98	R III sporadic treated with dist. water and glucose	29 "	6	6	4 "	25 "	6	2	5–6 "				
M100	R III sporadic ..	15 min.	6	6	3–4 "	15 "	Died of injection			15 min.	6	4	4 weeks
M100	" " ..	21 days	6	6	2–3 "	15 "	6	6	3 weeks	15 "	6	5	4 "
M103	Strong A sporadic ..	15 min.	6	6	3–4 "	15 "	6	6	6–7 "	15 "	6	6	7–8 "
M103	" " " ..	17 days	6	6	3–4 "	15 "	6	6	4–5 "	15 "	6	4	6–7 "
M107	R III sporadic treated with distilled water	15 min.	5	5	2 "	1 hour	6	5	3 "	20 "	6	4	4 "
M107	" "	20 days	6	6	1 week	15 min.	6	6	2–3 "	15 "	6	6	3 "
M109	Strong A sporadic ..	15 min.	6	6	4–5 weeks	15 "	6	6	6–7 "	15 "	?	?	
M109	" " " ..	10 days	6	6	1–2 "	15 "	6	5	4 "	15 "	6	2	4 "
M110	" " " ..	15 min.	6	6	4 "	15 "	6	1	5 "	15 "	6	1	6 "
M110	" " " ..	10 days	6	6	3 "	15 "	6	1	5 "	15 "	6	5	7 "

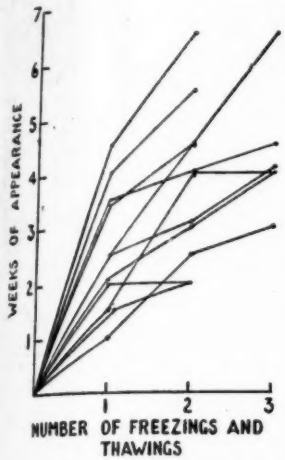

Chart showing rise in latent period at successive freezings.

added. It was sealed in ampoules containing 0.5 ml. each. These were frozen in a solution of CO_2 snow in "cellosolve" (ethylene glycol monoethyl ether, B.D.H.) to −79° C. for varying periods (from 15 minutes to 182 days). Each ampoule was then thawed, sometimes by immersion in water at 2° C., sometimes by holding in the hand. (No difference was noticed between the two methods.) If it was to be tested it was opened, the contents drawn up into a syringe, and 0.05–0.1 ml. (as in Cramer's original experiment) injected into the right mammary region of each mouse. Equal numbers of male and female mice were used, all younger than the cancer age. As stated in the preceding paper, sex is immaterial provided the injection is made in the nipple line. If the mince was to be refrozen it was dropped (after an interval of approximately five to six minutes) again into the cellosolve. Freezings other than the first were for 15 minutes to one hour. Tables A and B show the variations in the experiments and the results.

It is interesting to note that the appearance of those tumours which show infectivity after two or even three thawings is delayed with each successive thawing. Table B also demonstrates the slight heightening of activity when the same tumour is frozen for some days instead of for 15 minutes. The Chart demonstrates graphically the rise in the latent period for each tumour at successive freezings. It is therefore obvious that some activity is lost each time the tissue is thawed.

Conclusions

Repeated freezing and thawing of mouse mammary carcinoma tissue reduces its infective activity.

The apparent difference between the behaviour of sarcoma and carcinoma on repeated freezing and thawing is a quantitative and not a qualitative one.

PROPAGATION OF MOUSE CARCINOMA BY DRIED TUMOUR TISSUE

BY

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AND

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The propagation of mouse sarcoma, both chemically induced and sporadic, by means of tumour tissue frozen to −79° C., thawed, and then dried *in vacuo* at −15° C. has been demonstrated by Professor Gye (1949). That investigation revealed the presence of an agent, other than a living sarcoma cell, which has the properties of a virus. Since the spontaneous mammary cancers of the Strong A and R III strains of mice are known to be caused by the Bittner virus, it appeared to us desirable to try to propagate mammary cancer by the same method. The difficulties are, however, theoretically greater in the case of carcinoma than in sarcoma.

In the first place, although we know that the virus is liberated in its active form by prolonged freezing of the minced tumour, we also know that it is tissue-specific and must therefore be brought into intimate contact with mammary tissue. We know that in its active form it can infect male mammary tissue as easily as female if injected in the nipple line. But this tissue specificity in itself leads to a lower percentage of tumours in carcinoma than in sarcoma, since in the case of the sarcoma mutant of the virus any and every subcutaneous connective-tissue cell is susceptible to infection, and connective tissues are, moreover, everywhere easily accessible to an active sarcoma virus.

In the second place, experiments with serial freezing and thawing have shown that the Bittner virus is extremely thermolabile, and that many tumours will not withstand a second freezing and thawing. Since the method of drying sarcoma tissue described by Gye, Begg, Mann, and Craigie (1949) involves freezing the minced tumour in an ampoule, thawing it, transferring it to the drying-flask, and refreezing it at the beginning of the drying process, it is likely that only a few carcinomas (such as M103 and M107, described in the preceding paper at page 253) will yield active dried material by this method. We know certainly that such tumours as "63" and M91 (in the previous paper) will not withstand drying by this method. We also ascertained this

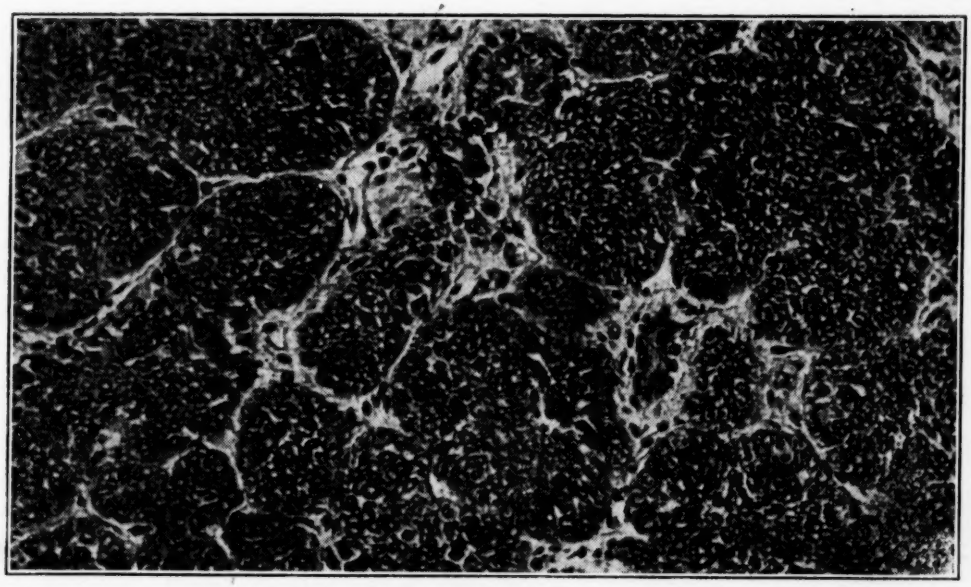

FIG. 1.—Section through the R III sporadic mammary tumour used in Experiment 111 (see Table).

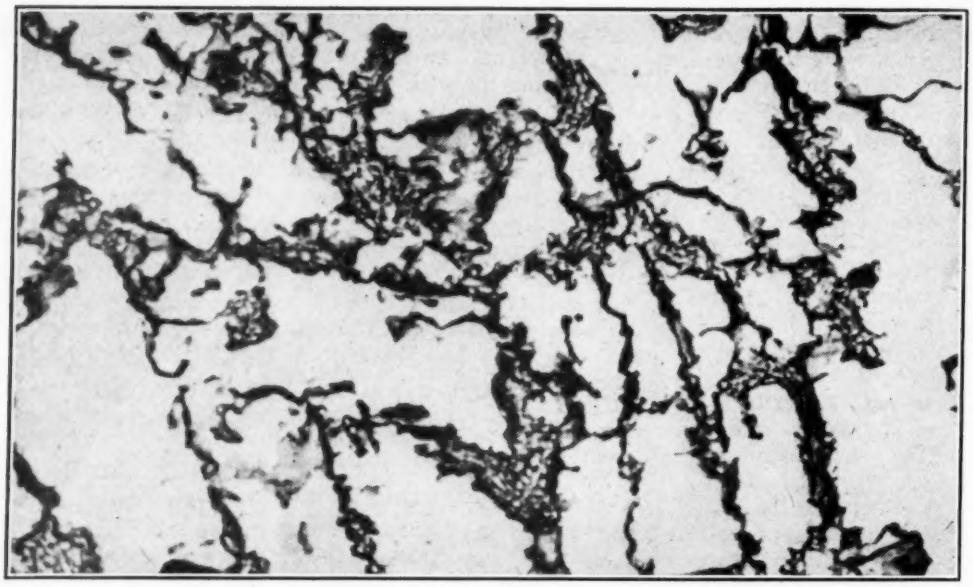

FIG. 2.—Section through the mince of the tumour shown in Fig. 1, after drying. No cellular structure is seen.

experimentally by drying " 63," two C3H, and two Strong A sporadic tumours by this method. These gave uniformly negative results.

A method was therefore required which would obviate the need for thawing the material before transferring to the drying-flask. This has been done in two ways; first, by grinding up the frozen material to powder in a mortar embedded in CO_2 snow, dropping the powder into the drying-flask, also cooled below freezing-point, and sticking it to the bottom of the flask with a small amount of ice-cold 5% glucose solution, which immediately solidifies. This is necessary, since the material to be dried must be in close contact with the bottom of the drying-flask. The second and easier way is to freeze the tumour mince in the flask in which it is to be dried. For this method a tubular container was used in place of the Erlenmeyer type of flask usually employed. This made storage at −79° easier, and all that was required was to take the tube from the " deep freeze " and attach it at once to the drying apparatus. This method has the slight disadvantage that material cannot be removed from the flask for test for activity after freezing but before drying. This is easy when the first method is used.

Either method, however, gives successful results. We have succeeded in six consecutive experiments, using six different sporadic mammary cancers, in obtaining tumours from dried material in both male and female mice. The tumours appear in the nipple line at the site of injection in from four to 10 weeks. All the mice were young and well under the cancer age. Photomicrographs of sections of R III sporadic mammary tumour used and of the tumour produced by inoculation of the dried material are reproduced in Figs. 1, 2, and 3. The Table shows the results.

Technical Details

1. *Preparing the Tumours for Freezing.*—The mouse is killed with coal gas. The tumour is dissected out aseptically, a small piece fixed in Bouin's solution, the rest minced in a sterile Craigie mincer and diluted with an equal volume of 5.3% dextrose solution. If it is to be stored in ampoules, 0.5–1 ml. is placed in each by means of a syringe with a wide-bore needle. The ampoules are then frozen rapidly to −79° C. and stored in solid CO_2 for the desired time. If storage in the drying-tube is desired 1 ml. of the mince is run into the tube and by manipulation over crushed CO_2 " dry ice " is made to freeze in a thin layer spread over the sides and bottom of the tube. The tube is then stored as above.

2. *Drying.*—The frozen ampoule is removed from the storage cabinet, cracked open, and the solid mass extracted into a sterile mortar embedded in CO_2 snow. All the instruments used are sterile and chilled by keeping in test-tubes embedded in CO_2 snow. The solid mass is ground in the mortar and most of it tipped into the cold drying-flask, which stands in a vacuum jar of " cellosolve " at −15° C. Ice-cold 5% glucose solution is dropped with a pipette on to the powdered mass in the flask. This solidifies and sticks it to the bottom of the flask. The drying is then started (see Craigie (1949) for details of the apparatus). The residual moiety of the frozen material left in the mortar is now

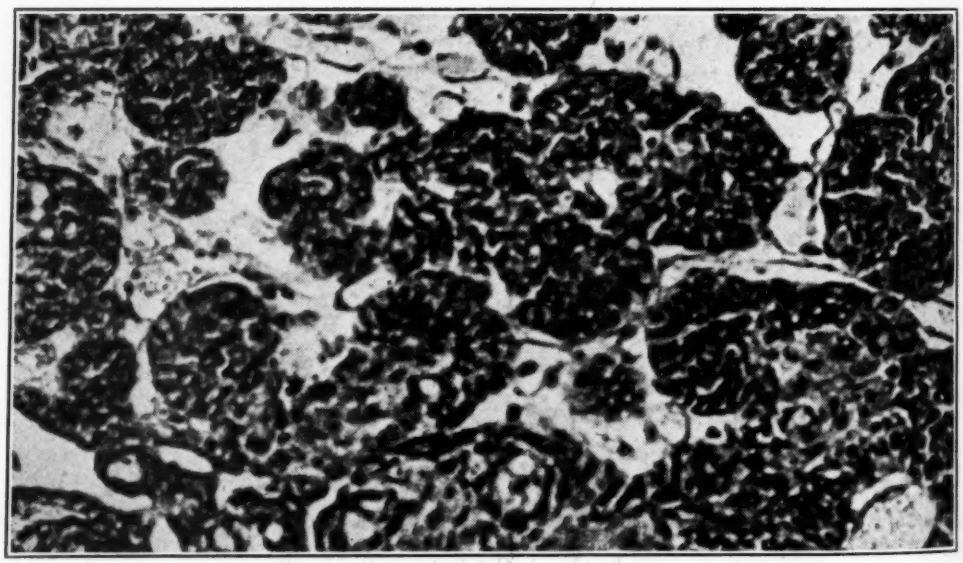

FIG. 3.—Section through the tumour produced by inoculation of the dried material into the breast tissue of a 6-weeks-old R III mouse.

Production of Mammary Cancer with Tissue Frozen and Dried without Thawing

No. of Expt.	Tumour	Time Frozen Before Drying	No. Inoculated	Tumours Obtained	Sex	Time of Appearance	Control: Frozen Only	
							Inoculated	Tumours
82	Mixture of 3 sporadic strong A tumours	3 weeks	6	3	1 F., 2 M.	5 weeks	3	1
82	"	4 "	6	3	2 F., 1 M.	4 "	3	2
97	"	56 days	6	2	2 F.	7 "	3	3
99	R III tumour from tumour which had been frozen 138 days and then inoculated	131 "	6	2	1 F., 1 M.	10 "	3	3
106	Strong A tumour from tumour frozen 14 days	24 "	6	2	2 M.	8 "	3	3
111	R III sporadic	5 "	6	1	1 F.	5 "	Not done	

thawed and inoculated into three mice of the appropriate strain as a control for the activity of the frozen tissue.

3. *Inoculation of Dried Material.*—When the drying is complete a small portion of the dry material is dropped into xylol and embedded direct for microscopical examination (no dehydration is of course necessary). The rest is wetted by running into the flask 2–3 ml. of a 1 in 500–1,000 neutral solution of cysteine. This produces an even emulsion, 0.05 to 0.1 ml. of which is then injected in the nipple line of each of six mice (three male and three female) of the appropriate strain. Attempts were made to improve the results by adding 33% rabbit serum saline to the cysteine and by the use of embryo extract. The latter is definitely harmful and the former of no greater value than cysteine alone, which is therefore recommended.

It must be repeated that avoidance of thawing at any time before drying is complete is essential. Experiment 82 was repeated without taking this precaution and using material known to be active, and no tumours were obtained from the dried material.

Conclusions

The active form of the Bittner virus obtained from mouse mammary cancer by freezing can be successfully dried *in vacuo* provided no thawing occurs before the material is dry.

Active dried mouse mammary cancer produces tumours in both male and female mice when injected into breast tissue.

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The annual report of the National Council of Social Service (1947–8) clearly shows how independent organizations can still make a helpful contribution to public welfare by working in collaboration with the developing statutory services and, even more important, by undertaking research work in new fields. The British delegation played a notable part at the International Conference of Social Work at Atlantic City in 1948. In the same year the National Council organized with great success an International Youth Conference in London, and delegates from 25 countries took part. The activities of the Council's associated groups have also continued to expand. The National Old People's Welfare Committee, for instance, has established 17 county committees and 235 local committees. The National Assistance Act has increased the need for co-operation between voluntary agencies and Government departments. In the words of the report, "The problem is so large and increases so rapidly that it requires the combined efforts of both statutory and voluntary agencies to meet the needs. . . . The stage is set therefore for a concerted effort over the whole country for the welfare of the older members of the community." A revised and enlarged edition of the handbook *Old People's Welfare* is to be published this year.

URETHRITIS, GONOCOCCAL AND NON-SPECIFIC, TREATED BY AUREOMYCIN

BY

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The treatment of non-specific urethritis has up to the present been unsatisfactory. Sulphonamides combined with urethral irrigation have in some cases been effective, but penicillin has proved of little value. Streptomycin has been shown to be successful in certain cases (Pulaski, 1947; Kane and Foley, 1947; Willcox, 1949); it is also known to be active against pleuropneumonia-like organisms both in animals and in man—a point of some interest, since there is evidence to suggest that this group of organisms may sometimes be associated with the distressing and by no means uncommon complaint of non-specific urethritis.

In the present communication the effects of "aureomycin" in non-specific urethritis are described. Pleuropneumonia-like organisms were obtained from the urethra in certain of these cases.

Aureomycin hydrochloride, dispensed in the form of capsules each containing 250 mg., can readily be given by mouth (Duggar, 1948), and oral administration is in fact probably more satisfactory than injection. Aureomycin is known to be effective against various rickettsial infections, brucellosis (Spink *et al.*, 1948; Galpine, 1949), staphylococcal and pneumococcal infections, and atypical pneumonia. Certain organisms infecting the urinary tract, such as *Aerogenes aerobacter* and *Streptococcus faecalis*, are susceptible, but *Proteus vulgaris* and *Pseudomonas pyocyanea* are resistant. Collins *et al.* (1948) and Finland *et al.* (1948) found that gonorrhoea was influenced: of 66 cases given an average of 1.3 g. over a period of 1.2 days 49 were cured, 11 were considered doubtful successes, and six were failures. Two cases of non-specific urethritis, both of which had resisted repeated courses of penicillin, sulphonamides, and streptomycin, were also successfully treated: in one, organisms of the pleuropneumonia-like group were present in the urethra before treatment. This patient was given 9 g. of aureomycin by mouth in six days: he was symptomatically improved within three days, and cultures were negative. The other patient, of whom no bacteriological details are given, received 11 g. in five days. He rapidly became asymptomatic.

Non-specific Urethritis

Four cases of non-specific urethritis were treated with aureomycin. In addition to the routine investigations undertaken in the clinic, special examinations were made both before and after treatment for the presence of pleuropneumonia-like organisms.

Case 1.—An unmarried white man aged 27 attended the clinic with a profuse purulent urethral discharge and slight dysuria of five days' duration. No gonococci were seen in the smear and no trichomonads or spirochaetes by dark-field examination. Urethral cultures revealed *Staphylococcus aureus* and diphtheroids, and pleuropneumonia-like organisms were found in smears stained with Giemsa and on culture in media containing a high proportion of serum. The urine was hazy in the first glass, and there were fullness and tenderness of the prostate, but the blood Wassermann, Kahn, and gonococcal complement-fixation tests were all negative. Treatment was deliberately withheld for two days, after which the consort was examined. She had no urethritis or cervicitis but a slight vaginitis. Coliforms were obtained on culture, and local treatment with acetarsol was prescribed.

Aureomycin in 250-mg. capsules was then administered orally to the man until a total of 2,000 mg. had been given over 60 hours. The discharge disappeared by the second day of treatment, but there was some headache and diarrhoea on the last day. When seen two days after the completion of treatment the urethral smear was free from pus, as was the prostatic bead. Ordinary urethral cultures grew only diphtheroids and *Staph. albus,* and a special examination revealed no pleuropneumonia-like organisms. The patient remained free from discharge, with a clear urine and a normal prostatic bead, while 8, 22, and 29 days later prostatic cultures grew only staphylococci.

Case 2.—A white man aged 39 who had been married for one month complained of a slight pain in the groin and a urethral discharge of five days' duration. The urethral smear revealed pus, and the urine was hazy in the first glass. The Wassermann, Kahn, and gonococcal complement-fixation tests of the blood were negative. The wife was examined, but there was no evidence of urethritis, cervicitis, or vaginitis. Her cultures showed *Staph. albus* and diphtheroids only.

Between Jan. 31 and March 14 the husband was seen on eight occasions and was given in succession 20 g. of sulphadiazine over five days, two single intramuscular injections of 300,000 units of procaine penicillin, a course of "mandamine" (two tablets four times daily for seven days), and a hexamine mixture for one week. At the end of this time the discharge was as profuse as ever and the urine was smoky, with threads in the first glass. The urethral smear showed an abundance of pus, and the culture grew *Staph. albus* and diphtheroids. Pleuropneumonia-like organisms were isolated in culture and were seen in smears stained with Giemsa. No spirochaetes or trichomonads were found by dark-field examination, and the serum tests were repeated and still found to be negative. He was given four capsules of aureomycin (1,000 g.), which were taken at intervals during 24 hours. When seen five days later there was a little urethral moisture containing a very few pus cells and the urine was quite clear, although a few threads were present. Culture of the urethra continued to show *Staph. albus,* but examinations for pleuropneumonia-like organisms were now negative. No other treatment was given and no discharge was apparent; the urine remained clear and the prostatic bead free from pus (although prostatic culture continued to show *Staph. albus,* diphtheroids, and occasionally coliforms) 10, 19, 24, 40, and 60 days after treatment. Frequent unprotected intercourse with the wife was resumed without trouble.

Case 3.—An unmarried white man aged 28 had a purulent discharge without dysuria for one week. There had been repeated exposures to one girl. The urethral smear showed an abundance of pus but no gonococci, and no trichomonads or spirochaetes were found by dark-field examination. Urethral culture grew *Staph. albus,* and pleuropneumonia-like organisms were recovered from the urethra. The consort was examined and showed no urethritis or cervicitis but a slight vaginitis. Cultures showed coliforms, diphtheroids, and *Staph. albus.* She was treated with acetarsol locally. The man was given four capsules of aureomycin within 24 hours, and when seen the following day his urethra was dry and his urine, which formerly had been hazy in the first glass, was now clear. The prostatic secretion was free from pus and the prostatic culture still grew *Staph. albus,* but no pleuropneumonia-like organisms could be recovered. When seen one week later there was a slight relapse, there being a scanty purulent discharge of one day's duration. Fresh exposure was denied. The urethral smear revealed only a moderate amount of pus cells, and, though the urine was very hazy, it cleared on the addition of a considerable amount of acetic acid, to leave a slight haziness in the first glass. The Wassermann, Kahn, and gonococcal complement-fixation serum tests were negative. He was again treated with aureomycin, being given four capsules (1,000 mg.) in 24 hours. When seen 2, 7, and 14 days later there was no discharge, and the urine was again quite clear and the prostatic bead free from pus. *Staph. albus* was grown both at the time of the relapse and again after re-treatment. A further search for pleuropneumonia-like organisms before and after the relapse was negative, and 40 days later the patient had no further symptoms.

Case 4.—An unmarried white man aged 19 had a mucopurulent urethral discharge with slight dysuria for one week. There had been an exposure in Lisbon two and a half weeks before the onset. The urethral smear and culture revealed no gonococci, but he had taken 2 g. of sulphathiazole during the previous two days. No trichomonads or spirochaetes were found by dark-field examination, and the Wassermann, Kahn, and gonococcal complement-fixation tests of the blood were negative. The urine was hazy in the first glass. He was given four capsules of aureomycin (1,000 mg.) over 24 hours, but when seen two days later the condition was unchanged. Urethral cultures from this case showed only *Staph. albus,* and pleuropneumonia-like organisms were not recovered by culture or seen in smears stained with Giemsa.

Gonorrhoea

For comparison two cases of gonorrhoea were treated.

Case 1.—An unmarried white man was first seen on Jan. 1, 1949, complaining of a urethral discharge of one week's duration and a swollen right testicle since October, 1948. The purulent urethral discharge contained an abundance of gonococci, and he was treated with a single intramuscular injection of 300,000 units of procaine penicillin. The discharge rapidly abated and the epididymitis subsided, but unfortunately his consort could not be persuaded to attend. On Jan. 21 he again showed a purulent urethral discharge containing gonococci, although he denied re-exposure. The apparent relapse was treated with a single injection of 600,000 units of procaine penicillin, to which he responded, and he was quite well when seen 7, 30, and 36 days after treatment. On March 5, following exposure one week before to the same girl, he came once more with a purulent urethral discharge containing gonococci. The urine was hazy in two glasses, and the Wassermann, Kahn, and gonococcal complement-fixation tests of the blood were negative. His consort was secured and found to be suffering from gonorrhoea, which was treated.

The man was given eight 250-mg. capsules of aureomycin hydrochloride orally over 52 hours. When seen 48 hours after the onset of treatment, and before its completion, the discharge had completely gone and the urine was absolutely clear. An absence of discharge, a clear urine, and a freedom from pus in the prostatic smear, together with a negative culture for gonococci, were found at 7, 14, 35, 42, and 49 days after treatment.

Case 2.—An unmarried white man aged 28 attended the clinic with a purulent urethral discharge and slight dysuria of four days' duration. There was also a small, slightly tender right inguinal lymph node, and there had been a contact with a stranger ten days before. Gonococci were found without difficulty in the smear and were confirmed by culture. The urine was markedly hazy in the first glass, and the Wassermann, Kahn, and gonococcal complement-fixation serum tests were negative. He

was given four capsules of aureomycin in divided doses over 20 hours (1,000 mg.). When seen two days later the discharge had gone and the urine was completely clear apart from some threads in the first glass; the inguinal adenitis had entirely subsided. The urethral smear showed no pus cells, and the culture was negative for gonococci. He did not trouble to attend again until the 26th day, when he had no discharge, his urine was clear, and his prostatic secretion was free from pus.

Discussion

The results here recorded confirm those from America, and suggest that aureomycin is a satisfactory treatment both for gonococcal urethritis and for non-specific urethritis, pleuropneumonia-like organisms disappearing rapidly from the urethral discharge.

Aureomycin has also been shown to be effective in lymphogranuloma venereum (Wright *et al.*, 1948a, 1948b) and in granuloma inguinale (Greenblatt *et al.*, 1948). In addition O'Leary *et al.* (1948) have reported that doses of 40 to 50 g. of aureomycin rapidly cleared up the clinical symptoms in two cases of syphilis with early secondary lesions: serological reactions were unaffected. This antibiotic therefore seems capable of influencing all the common venereal infections.

Summary and Conclusions

Two cases of gonococcal and four cases of non-specific urethritis have been treated by oral aureomycin. One of the gonococcal cases and one of the non-specific cases received 2,000 mg. and the remainder 1,000 mg. over 24–60 hours.

Both the gonococcal cases responded, as did three of those with non-specific urethritis. Although one of the latter relapsed, it reacted favourably to further treatment. There was one failure.

In addition to the routine tests special examinations were made for pleuropneumonia-like organisms in patients with non-specific urethritis. These organisms were recovered before treatment in three cases and after treatment in none.

Our thanks are due to Professor G. A. H. Buttle, O.B.E., in whose laboratories in the Department of Pharmacology, School of Pharmacy, the special bacteriological investigations were carried out. One of us (G.M.F.) wishes to thank the Medical Research Council for a grant towards laboratory expenses.

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The effect of vaccination during pregnancy on the incidence of malformations has been studied by Greenberg and his colleagues (*Paediatrics*, 1949, **3**, 456). More than 5,000,000 people were vaccinated following the outbreak of smallpox in New York early in 1947. Among these were 4,172 women in the first three months of pregnancy. They gave birth to 68 children with malformations, an incidence of 1.63%. A control non-vaccinated group of 2,186 women in the same period of pregnancy gave birth to 30 malformed infants, an incidence of 1.37%. These studies have shown that vaccination of women in the first three months of pregnancy does not appear to have any deleterious effect on the developing embryo.

NEUROLOGICAL COMPLICATIONS OF MUMPS

BY

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AND

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Hamilton (1781) first recorded cerebral manifestations associated with mumps; since then the subject, without becoming properly crystallized, has commanded medical interest as a comparative rarity.

Dopter (1910) reported that 9.8% of 1,705 cases of mumps showed meningeal symptoms, but admitted that "real" meningitis might be very rare. When Acker (1913) studied details of 30 fatal cases of cerebral mumps he considered that true meningo-encephalitis had been present. During and after the 1914–18 war French and American physicians described meningo-encephalitis complicating mumps, and details of isolated cases continue to appear in medical journals.

Coe (1945) agreed with Paddock (1932) that clinical meningitis accompanied mumps in from 0.15 to 0.5% of cases. Frankland (1941), in discussing a mumps epidemic involving 234 cases, put the occurrence of meningitis as high as 30% and reckoned that meningeal symptoms in contact cases of mumps could be presumed to be due to mumps infection. Five of Frankland's cases gave a meningeal reaction in the cerebrospinal fluid. Another epidemic of mumps, among men of the New Zealand Expeditionary Force in Japan, was noted by Laurence and McGavin (1948), who considered that out of 208 cases 60 had symptoms suggestive of meningeal involvement and six had definite meningo-encephalitis.

Ford (1937) has collected information demonstrating the widespread neurological lesions which may be expected in mumps, lesions involving almost any part of the central nervous system.

While it is generally agreed that the cerebral symptoms usually occur after the ordinary signs of mumps have shown themselves, Colomb and Mary-Mercier (1912), Bedingfield (1927), and Frankland (1941) described cases with neurological signs before there was any suspicion of mumps. Also, Howard (1919) and Frankland (1941) reported cases in which meningo-encephalitis occurred during a mumps epidemic and suggested that these were cases of mumps with the neurological signs as the only clinical manifestations.

Dopter (1910), Frankland (1941), and Lightwood (1946) tend to hold that the virus of mumps can be primarily neurotropic, and this view is given tentative authority by Harries and Mitman (1947) on experimental evidence. Similarly, Box (1946) ascribes the virus with possible neurotropic qualities.

In reviewing this considerable literature and remembering that individual cases of mumps meningo-encephalitis are still reported in some detail from time to time, we feel that a group of 14 cases occurring in a restricted area and during a short period of time merits attention.

The Present Series

With one exception all the cases developed in the Bristol area in May (1 case), June (3 cases), July (3 cases),

TABLE I

Case No.	Sex	Age	Day of Disease on Admission	History							Admission Findings												Progress of Disease						State on Discharge	Remarks
				Headache	Parotitis	Orchitis	Vomiting	Delirium	Drowsiness	Shivering	Paralysis	Meningitis Symptoms	Parotitis	Orchitis	Abdominal Pain	Vomiting	Frontal Headache	Pain in Back	Nystagmus	W.B.C. 1,000/c.mm.	Polymorphs %	Lymphocytes %	Monocytes %	Eosinophils %	Basophils %	Day of Disease Temp. Settled	Day of Disease Dev. Orchitis	Day of Disease Lost Nuchal Rigidity	Day of Disease Dev. Parotitis	Day of Disease Dev. Meningitis	Days in Hospital		
1	M	19	2	+	−	−	+	−	−	−	−	+	−	−	−	+	+	−	+	6·5	73	22	4	1	−	10	9	9	3	1	22	Well	Submaxillary mumps
2	M	29	6	+	+	+	−	−	−	−	−	+	−	−	−	+	+	−	+	8·7	69	25	6	−	−	9	2	9	1	5	15	,,	—
3	M	15	2	+	+	+	−	−	−	−	−	+	−	−	−	+	+	−	+	6·7	72	22	3	2	1	5	−	6	2	3	13	,,	—
4	M	9	2	+	−	+	−	−	+	−	−	+	−	−	−	+	+	−	+	8·7	76	23	1	−	−	5	−	9	3	1	11	,,	—
5	M	4	6	+	+	−	+	−	−	+	−	+	+	−	−	+	+	−	+	9·1	65	26	7	1	1	9	−	13	1	6	16	,,	Submaxillary mumps
6	M	26	2	+	+	−	+	−	−	+	−	+	+	−	−	+	+	−	+	6·8	70	25	4	−	1	11	7	9	3	1	22	,,	—
7	F	18	2	+	+	−	+	−	−	+	−	+	+	−	−	+	+	−	+	7·9	66	23	8	2	1	7	−	8	1	3	15	,,	—
8	M	25	5	+	+	−	+	−	−	+	−	+	+	−	−	+	+	−	+	10	75	20	4	−	1	8	5	11	1	5	16	,,	—
9	F	2	4	−	−	−	−	−	−	−	−	+	+	−	−	+	+	−	+	6·1	63	31	2	1	3	11	−	13	3	4	16	,,	—
10	M	8	14	+	+	−	+	−	−	+	−	+	+	−	−	+	+	−	+	7·3	66	27	7	−	−	16	−	17	6	12	13	,,	Ext rectus paralysis
11	F	3½	7	+	+	−	+	−	−	+	+	+	+	−	+	+	+	−	−	—	—	—	—	—	—	11	−	−	2	7	10	,,	Ext. rectus paralysis
12	F	6	1	+	−	−	+	−	−	+	+	+	−	−	−	+	+	−	−	9·7	50	34	7	9	−	13	−	−	7	1	14	,,	Paresis of legs
13	M	1½	2	−	−	−	+	−	+	−	−	+	−	−	−	+	+	−	−	—	—	—	—	—	—	—	−	−	6	3	16	,,	Facial palsy
14	M	15	2	+	−	−	+	+	−	−	−	+	−	−	−	+	+	+	+	8	55	32	6	4	3	4	−	5	6	1	16	,,	—

August (6 cases), and September, 1948 (1 case). During the same period 23 cases of anterior poliomyelitis were admitted to hospital—more than during the general epidemic period of 1947. Otherwise there was no marked prevalence of virus infections. It was noted that 18 out of 48 cases of known anterior poliomyelitis had long previously had mumps.

Since mumps is not notifiable and cases are not usually admitted to hospital, it is impossible to compute the total number of cases in the area during the time that we received these 14 cases, but hearsay evidence did not suggest even a moderate mumps epidemic. Table I gives details of the cases.

It will be seen that Cases 1, 4, 6, 12, 13, and 14 had signs of involvement of the central nervous system before there was any other indication of mumps. All the patients appeared to be alarmingly ill on admission, and the majority entered hospital under a quite justifiable diagnosis of meningitis. Four cases showed paralysis, and nystagmus was a common feature. Pyrexia on admission was constantly in the region of 102° F. (38.9° C.). Bradycardia, reported as common by French writers, was not noted. Severe frontal headache was a distinctive feature. All the patients were discharged well and without sequelae. Table II gives details of cerebrospinal fluids on admission.

In all cases the fluid pressure was raised and the general picture was that noted in other types of virus encephalitis.

The emphasis laid by Frankland (1941) on the occurrence of a purely lymphocytic reaction was not sustained ; in fact, the polymorphonuclear percentages were welcomed in differentiating some of the cases from benign lymphocytic meningitis ; but these polymorphonuclear findings made a differential diagnosis from tuberculous meningitis more difficult, and in view of the necessity for early treatment of this condition with streptomycin the problem is important. The recent emphasis on the lowering of the cerebrospinal fluid sugar concentration in tuberculous meningitis should be a valuable differentiating point, for the sugar concentration in mumps meningitis is not low. It is worth noting that two of our cases were admitted as cases of tuberculous meningitis for streptomycin treatment.

TABLE II

Case No.	Globulin (+ = Increase)	Sugar (+ = Present)	Protein, mg./100 ml.	Chlorides, mg./100 ml.	Cells per c.mm.	Polymorphs %	Lymphocytes %	Monocytes %	Organisms	Culture	Day of Disease Lumbar Puncture Performed
1	+	+	60	730	110	3	97	—	—	—	2
2	+	+	35	725	100	8	92	—	—	—	7
3	+	+	80	720	380	14	85	1	—	—	3
4	+	+	45	735	84	6	90	4	—	—	2
5	+	+	95	700	1,050	7	92	1	—	—	6
6	+	+	85	730	213	10	90	—	—	—	2
7	+	+	35	730	110	8	92	—	—	—	6
8	+	+	40	740	45	10	90	—	—	—	8
9	+	+	35	720	25	—	100	—	—	—	4
10	+	+	60	710	800	30	63	7	—	—	15
11	+	+	45	625	390	5	95	—	—	—	7
12	+	+	—	760	150	42	58	—	—	—	4
13	+	+	20	760	113	5	95	—	—	—	5
14	+	+	75	750	940	17	80	3	—	—	2

Most of the cases of mumps meningitis give a history of previous contact with a case of mumps, which is not always inquired about. It is of interest to note that Case 7 was that of a nurse who came in contact with Case 11 and might well have had the same strain of virus. A further contact with this nurse was a surgeon working in the same hospital, who also developed a severe meningitic reaction, coming on nine days before the appearance of orchitis. As this surgeon refused lumbar puncture we are unable to include him in this series. It does seem that this strain of virus was highly neurotropic.

These three cases bear some resemblance to the cases of mumps meningitis in twin brothers quoted by Paddock (1932). These two brothers developed typical severe meningitis with increased cellular responses in the cerebrospinal fluid, but neither case showed any parotitis. Three sisters in the same family, however, showed the typical parotid symptoms found in mumps. It would seem, therefore, that the virus can have a predilection for the nervous tissue in certain people, but it more usually reacts on the parotid.

Comment

Although it has been suggested that a cerebrospinal reaction exists in cases of orthodox mumps, and Lavergne *et al.* (1938) have even shown many instances of a cerebrospinal fluid pleocytosis in asymptomatic contacts of mumps, most commonly during the last three days of the incubation period, yet a grouping of 14 cases, such as put forward in this article, suggests the presence of an organism more than usually neurotropic. It might also suggest a population more than usually susceptible to a neurotropic virus, and this might have some bearing on the unusual prevalence of poliomyelitis during the same period.

Donohue (1941) has described perivascular demyelinization, similar to that seen in other cases of post-infective encephalitis, when he reported the pathology of a case of fulminating mumps meningo-encephalitis. Gordon (1927) experimentally produced mumps encephalomyelitis in a monkey (*M. cynomolgus*), and noted a cerebrospinal fluid reaction similar to that seen in the cases described here. He also described histological parotitis at necropsy in four cases of encephalitis lethargica (Gordon, 1913). Armstrong *et al.* (1936) similarly demonstrated the virus of choriomeningitis in the testes of experimentally infected monkeys.

There are authenticated cases of orchitis (Humphries, 1947) and pancreatitis (Box, 1946) as the only signs of mumps. We may therefore be but guessing at the tissue predilections of virus organisms. It may well happen that cases loosely described as aseptic meningitis may in reality be mumps meningo-encephalitis. If, however, after study of the other manifold manifestations of mumps it is considered that this virus infection is generalized and apt to influence any tissue—even the foetus *in utero* (Humphries, 1947)—then it is quite understandable that the central nervous system can at times be affected too, and possibly in preponderance. Thus it would no longer be necessary to postulate a neurotropic virus but rather one which settles where it will, and, depending on the speed of immunity production, the salivary glands, central nervous system, pancreas, ovaries, testicles, or pericardium may one or all produce clinical signs of virus inflammation.

Summary

The literature concerning the central nervous system manifestations of mumps is reviewed.

Fourteen cases of mumps meningo-encephalitis are presented, six of which occurred before other signs of mumps developed.

The place of the neurological signs of mumps in the picture of the disease is discussed, and it is suggested that, being a general infection, central nervous types of the disease are apt to occur more by accident than because the virus is necessarily essentially neurotropic.

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LEUCOCYTE COUNTS IN THE PREVENTION OF DRUG AGRANULOCYTOSIS

BY

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Himsworth (1948) stated that he and Morgans (1947) had come to the conclusion that frequent blood counts for the early detection of agranulocytosis during treatment with thiouracil are worse than useless, because agranulocytosis develops like a bolt from the blue, and a normal count may impart a quite unjustifiable sense of security. This has long been known in the case of the sulphonamides, but the evidence has been generally disregarded, and leucocyte counts for purposes of prophylaxis are still considered desirable. Roberts (1948) and Hendry (1948) have drawn attention to the greatly increased demands being made on clinical pathological departments of hospitals, and leucocyte counts, requested under the mistaken impression of their value in the prevention of agranulocytosis, constitute an unnecessary and wasteful part of such demands.

I drew attention to the failure of serial leucocyte counts during sulphanilamide administration either to give warning of an impending agranulocytosis or to prevent a fatal outcome (Young, 1937). Later I collected evidence supporting this observation (Young, 1944). On the other hand, Britton and Howkins (1938) carried out leucocyte counts during 14 days of sulphonamide treatment in 50 patients, and found that the polymorphs fell during treatment in 46% of cases—in 10% to fewer than 2,000 per c.mm—but they did not observe agranulocytosis. Also Bigler *et al.* (1938) carried out counts in 33 persons during short courses of sulphonamide treatment, and concluded that sulphonamides seemed to cause depression of white blood cells even to a point at which leucopenia developed, but agranulocytosis did not occur with this depression.

It might be anticipated that leucocyte counts would be useful in the prophylaxis of agranulocytosis in two ways: (1) in preventing the occurrence of agranulocytosis, and (2) in reducing case mortality through earlier diagnosis.

Influence of Counts on the Occurrence of Agranulocytosis

It has been assumed that the detection of a drop in the leucocyte count to a leucopenic level during treatment would enable agranulocytosis to be averted by stopping administration at this stage, and it has been claimed that this has been achieved (Hohmann, 1938). Plum (1937), by administering amidopyrine to patients who had recovered from agranulocytosis due to the same drug, showed that the changes in the marrow are well established before the peripheral blood gives any warning, and that, although administration of the drug was stopped long before this warning in the blood, agranulocytosis followed. His experiments, and other evidence (Shecket and Price, 1939; Agranat *et al.*, 1939; Filler, 1941), indicate that when a leucopenia is due to an imminent agranulocytosis the latter will follow whether the drug is stopped or not. If a rise in granulocytes occurs immediately after administration ceases the condition merely represents the mild leucopenia which occurs in about 50% of persons, as demonstrated by Britton and Howkins (1938) and Bigler *et al.* (1938) with sulphonamides.

That such a leucopenia does not proceed to agranulocytosis is readily demonstrated by continuing the administration of the drug. Such a test case is the following, in which thiouracil was given for the treatment of thyrotoxicosis.

Before treatment was started the blood showed a polymorph count of 3,000 per c.mm. in a total leucocyte count of 5,600. After 14 days' treatment the count had fallen to 1,480 polymorphs in a total count of 3,900. At this stage, instead of suspending treatment, the dose of thiouracil was doubled. Four days later the counts were the same, the polymorphs being 1,587 and the total leucocytes 4,100. At the end of a further six days' treatment the polymorph count had risen to 3,538 and the total leucocytes to 6,100, restoration to the pre-treatment level having ensued in spite of the continued administration of the higher dosage.

If such a leucopenia is to be used as an indication for stopping treatment it not only seems to be an unreliable indicator but may be so misleading that it results in patients being deprived unnecessarily of the benefits of treatment.

Filler's (1941) case strikingly demonstrated the failure of leucocyte counts in the prevention of agranulocytosis. The case was one of staphylococcal septicaemia treated with sulphamethylthiazole. After the blood culture had become sterile, pyrexia was still present and drowsiness was noted for the first time. There was no leucopenia at this period, but owing to the suggestion of toxicity the drug was stopped. Six days later polymorphs had completely disappeared from the peripheral blood, so that, although treatment had ceased before there was any warning leucopenia, agranulocytosis was not prevented.

Influence of Leucocyte Counts on Mortality

Although leucocyte counts are generally misleading as indicators of impending agranulocytosis, it might be anticipated that serial counts, by bringing about cessation of the offending drug at the earliest possible moment, would lower mortality in comparison with cases in which no counts were made.

To test this assumption the available data relating to 74 cases of sulphonamide agranulocytosis were extracted from the literature and are presented in the Table.

Table Showing Leucocyte Counts and Mortality

No. of Counts:	0	1–14	1–3	4–14
No. of recovered cases	14	19	14	5
No. of fatal cases	16	25	16	9
Case mortality per cent. ..	53	57	53	64
Observed difference per cent. ..	4		11	
2 × standard error of difference	23·5		32	
Significance of difference ..	Nil		Nil	

Two comparisons are made: first, between cases having no counts and those having one or more ; secondly, between those having one to three counts and those having more than three. The latter are rather few in number, but in no group was any significant difference in case mortality demonstrated. While the data may not be sufficient to establish the absence of any influence of leucocyte counts on case mortality, they show that the assumption generally made that they will do so is not justified on the available evidence, at least in regard to the sulphonamides. Individual cases illustrate how completely they can fail. In one of my own cases (Young, 1937) treatment was stopped on the day after a count which showed no drop in polymorphs, so that even if a reduction had been demonstrated on the following day the drug would not have been stopped sooner, yet the patient died. In the case of Shecket and Price (1939) five counts in the six days preceding agranulocytosis failed to avert a fatal outcome, although the drug was stopped when the leucocytes fell from 12,500 to 8,500 per c.mm. Morgan and Detweiler (1939) described a case in which 14 counts were made during 19 days' treatment, but again death occurred. Other cases providing similar evidence are among those enumerated in the table, references to which, with individual data, are given by Young (1944).

Discussion

The evidence, both experimental and clinical, indicates that in drug agranulocytosis the condition is inaugurated in the bone marrow some time before granulopenia occurs in the peripheral blood, and the information given by the latter is too late for prophylactic purposes. Plum's (1937) experiments with amidopyrine showed that the formation of granulocytes ceased at its earliest stage, but that the marrow granulocytes already formed continued to develop and so sustained the numbers in the peripheral blood for some days after the condition had been established in the marrow.

The bone-marrow changes found in sulphonamide agranulocytosis have been variously described as absence, reduction, maturation arrest, and aplasia of neutrophil granular cells, but the term "maturation arrest" is not justified, as it has been based only on single examinations which cannot show whether the picture is static or changing. As indicated above, Plum showed that there was no maturation arrest in amidopyrine agranulocytosis.

Rubinstein (1944) made serial marrow examinations in a case of thiouracil agranulocytosis during recovery. He showed that the return to normal of the marrow preceded that of the peripheral blood, the polymorphs in the latter reaching the pre-treatment level some time between the sixth and nineteenth days after the marrow count was normal. These observations again indicate a considerable time lag between the marrow and the peripheral blood, and agree with Plum's findings with amidopyrine that marrow examination gave earlier information than did the blood.

Beck (1933) recorded that the myeloid bone marrow in agranulocytosis might be aplastic, normal, or hyperplastic, and this variability in the marrow findings has caused some confusion regarding the basis of the condition. A type of agranulocytosis occurs which is probably due to cell destruction rather than failure to produce granulocytes, but, so far as is known, this type does not seem to be produced by drugs. The finding of numerous granulocytes in the bone marrow has been reported in cases due to various drugs, including at least one due to sulphonamides (Rosenthal and Vogel, 1939). It is probably significant that this sulphonamide case was the only one to recover among those in which the marrow was examined in the series studied by Young (1944), the others all showing various degrees of aplasia.

From an examination of available data (Dameshek, 1944 ; Young, 1944) it seems likely that the variations reported in the marrow in drug agranulocytosis generally are due to variations in the state of marrow recovery at the time of examination. The marrow has most often been examined post mortem, and, death being as a rule due to bacterial invasion and not directly to the state of the marrow, all stages of recovery in granulocyte production may be present at the time of death. A single examination of the marrow may therefore be misleading in regard to the nature of the condition, which, when due to drugs, usually appears to be aplastic in type.

Instead of leucocyte counts during treatment with thiouracil, Himsworth *et al.* (1947) recommend that every patient should be told that if he develops a sore throat

or fever he must discontinue the drug and report to his doctor. The same procedure might be applied in the prolonged sulphonamide administration employed in rheumatism prophylaxis. For other cases of sulphonamide administration, limitation of the period of treatment to a week or ten days is probably the best method of prophylaxis, and seems to have almost eliminated agranulocytosis due to this group of drugs. Amidopyrine agranulocytosis is readily avoided, as this drug is unnecessary and should no longer be used.

Summary

No evidence has been found that serial leucocyte counts during the administration of agranulocytosis-producing drugs either prevent agranulocytosis or reduce case mortality.

The reason for this failure is found in the bone marrow, where the condition can become fully established before the peripheral blood gives any warning.

Reliance on leucocyte counts is undesirable, as they may give rise to a misguided sense of security which may prevent the adoption of more useful measures.

Leucocyte counts for purposes of prophylaxis also constitute a waste of time in clinical pathological departments of hospitals, and may mislead clinicians into stopping the administration prematurely, so unnecessarily depriving patients of the benefits of treatment.

Other methods of dealing with drug agranulocytosis are briefly mentioned.

I am indebted to Dr. J. K. Rennie for clinical data. Much of the material in this article is taken from a thesis accepted by the University of Edinburgh for the degree of M.D.

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Information about the hospital services in the United States is summarized in a report published in the *Journal of the American Medical Association* (May 7, 1949, p. 23). The present bed capacity is 1,423,520, and the average daily number of patients occupying hospital beds during 1948 was 1,217,154. Between 16 and 17 million patients were admitted to hospital during the year. The greatest increase in service compared with past years was in the general hospitals. The average daily number of patients in mental hospitals was 664,399: thus nearly 55% of the occupied hospital beds were utilized for psychiatric care. The tuberculosis hospitals contained about 5% of the total hospital load. The average length of stay in general hospitals fell from 11.4 days in 1947 to 10.5 in 1948. There are now 807 hospitals approved for the training of interns and 1,140 for the training of resident physicians. The accredited schools of nursing education, which total 1,163, enrolled 100,174 student nurses in 1948.

TORSION OF NORMAL FALLOPIAN TUBE

BY

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Torsion of the normal Fallopian tube when first encountered strikes one as being rare enough to warrant a little excitement. On looking at the tube and its mesentery during operative work in the abdomen it is hardly conceivable that the tube itself should undergo torsion without involving the neighbouring structure of the ovary: with its broad pedicle it would seem impossible that it could so twist on itself as to give rise to urgent symptoms.

Case Report

A 2-para aged 24 was admitted to the maternity unit of the Ayrshire Central Hospital on Dec. 7, 1947. The elder child was 2½ years and the younger 8 months. The family history showed nothing of importance. The husband was alive and well. The patient had been feeding the baby until three weeks before admission to hospital. She stopped on account of an attack of pain in the left iliac fossa and slight uterine bleeding. This was the first sign of uterine bleeding since the birth of the baby, and she was sent to hospital by her doctor as a case of threatened abortion or of subinvolution.

On admission the temperature was 99° F. (37.2° C.), pulse 124, respirations 20, B.P. 120/80 mm. Hg; blood Rh-negative; O(iv); W.R., negative; urine, N.A.D.; chest, heart, and lungs, N.A.D. On vaginal examination a small tender mass was felt behind the uterus, which was slightly enlarged, retroverted, and tender.

After admission there was no further uterine bleeding, so the differential diagnosis rested between ectopic gestation and an inflammatory condition of the tubes. During the next three days there was a slight rise in temperature, and a course of penicillin of 1,000,000 units was given. An Aschheim–Zondek test, which had been taken on admission, was now shown to be negative, and as the patient's temperature had settled she was examined under general anaesthesia. The previous findings were confirmed and the provisional diagnosis of tubal mole made.

Operation.—On Dec. 16 the abdomen was opened through a Pfannenstiel incision. A small mass surrounded by adhesions was found in the pouch of Douglas. When the adhesions were freed the mass was found to be the left tube with three clockwise twists in it. It was removed, leaving the ovary untouched, and the stump was buried in the broad ligament. Appendicectomy was performed and the abdomen closed. The patient was ambulatory by the third day and was discharged from hospital on Dec. 27, 11 days after the operation.

The specimen would at first suggest an atypical tubal pregnancy which had undergone torsion. Section showed no evidence of pregnancy, and microscopically no cells suggestive of decidua or chorionic elements could be found. This, after consideration of the patient's symptoms and history in retrospect, supported the diagnosis of simple torsion of the tube.

Discussion

The standard midwifery textbooks make no mention of this entity, but after reviewing some of the literature it was perceived that it was not really rare. Bland-Sutton (1890) reported the first case, and since then many others have been published. In the majority there has been a history of a diseased condition of the tube—hydrosalpinx, etc. Darner (1926) states torsion of the undiseased tube is less common, particularly in the virgin. French authors, in particular Regad (1933a, 1933b), have referred to a syndrome,

as they consider the condition to be common enough to be regarded as a clinical entity in the virgin. This is of course understandable. In married women there is a greater difficulty in assessing the normality of the tubes, particularly after pregnancy, and this was borne out in my case, in which the woman's last pregnancy occurred only seven months before. She had never menstruated since then and had been feeding the baby, which of course is no bar to pregnancy or pelvic infection.

Shute (1932) wrote an extensive paper on this condition, dealing with all theories of causation and its distribution in the various age groups and types of cases encountered. He found that 80% of cases occurred during the genital activity of women and the remaining 20% during puberty: 68% of the former were on the right side and in 62% the torsion was clockwise. It has been extremely difficult to separate the cases associated with tubal disease from those in the normal tube, as only 8% of specimens had had histological examinations, although one must presume that the 20% arising before puberty occurred in a normal tube. In those not associated with disease there would seem to be some connexion with the initiation of menstruation, and Davies (1925) and McEachern (1934) each cited a case similar to mine. It must be assumed that the bleeding occurring in my case was that of a commencing period.

Blum and Sayre (1937) mentioned the prevalent theories: (1) Haemodynamic (Payr), the idea being that the pulsations of the blood vessels in the mesentery of the tube can in some way initiate the torsion; (2) Sellheim's suggestion that the movements of the body and abdominal wall could be transmitted and this would initiate the torsion. This second theory is understandable when applied to a large ovarian cyst which is in contact with the abdominal wall, for any sudden violent, irregular movement of the abdominal muscles might then start a movement of the cyst to right or left, but it would hardly seem applicable to the tube, which is lying deep in the pelvis.

Anatomical malformations and physiological peristalsis are much more likely to initiate a twist. It has been suggested that drugs such as apiol may also initiate such excessive peristalsis as to start torsion. Once a twist has occurred it is easy to understand the consequent interference with circulation and the indrawing of the fimbriae which occur in acute salpingitis and ectopic pregnancy. This results in the extravasation of blood into the tube, with the formation of a small pedunculated mass which may undergo further torsion.

Such a sequence of events will give rise to all the clinical symptoms seen in the case reported, and suggests the erroneous diagnosis of ectopic pregnancy or salpingitis.

Unless this occurs in the pubescent girl it is, to my mind, impossible to recognize a definite syndrome which will identify torsion of the normal Fallopian tube, particularly as it must be assumed that the latter cases are virginal and difficult to examine. The urgency for operation in these cases is not great; cases have been described in which the distal portion of the tube has actually been amputated by the torsion and a free tubal mass has been removed some considerable time—even years—after what must have been the original crisis.

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AN OUTBREAK OF FOOD-POISONING IN BROMYARD DISTRICT

BY

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On Friday, Nov. 5, 1948, a number of people left Bromyard by coach to attend the evening performance of a play in Birmingham. They arrived early, and 14 persons, so far as is known, entered a near-by restaurant and had a meal consisting of cold beef sandwiches and coffee or alcoholic refreshment. The beef in the sandwiches was described by different patients as being "undercooked," "overcooked," "dark-looking, stringy, and tough."

Of these 14 persons, 11 were taken ill on Nov. 6 and one on the 7th, the incubation period varying from 16 to 36 hours. The presenting symptoms were malaise, lassitude, severe frontal headache, aching in the limbs and back, fever, shivering, abdominal pains, diarrhoea, and in some cases nausea and vomiting. One patient collapsed while attending a memorial service on Nov. 6. Photophobia and tenderness of the eyeballs were complained of by four patients, and one patient stated that he had had puffiness round the eyes.

The severity of the attack varied considerably: from headache and abdominal discomfort, with mild pyrexia only, to complete incapacitation with pyrexia of 102–104° F. (38.9–40° C.) at the onset, associated with extreme diarrhoea and blood in the stools. The duration of the attack extended over a period of two to three days in the mildest case; whereas in the most severe cases, although the acute phase of the illness had passed off within seven days, residual lassitude, anorexia, and minor recurrences of the headache and abdominal symptoms persisted for two to three weeks.

Two of the persons who ate the beef sandwiches suffered only from slight headache and malaise on the following day. A specimen of faeces from one of these persons gave a negative result on culture; no specimen could be obtained from the other person. It is of interest to note that, of those persons who took alcoholic refreshment, these were the only people who had *two* glasses of either gin or sherry with their sandwiches.

Investigations in Bromyard.—Specimens of faeces obtained from the 12 persons who were taken ill yielded salmonellae on culture, which were later identified as *Salmonella bovis morbificans.*

Investigation at the Restaurant, Birmingham.—(*a*) Bacteriological examination of specimens of faeces from the eight members of the staff at the restaurant showed that four persons were excreting *Salm. bovis morbificans.* Two of these four had not been ill, while the other two had had symptoms of enteritis after Nov. 5. (*b*) Bacteriological examination of rat droppings in the restaurant revealed the presence of *Salm. bovis morbificans.* (*c*) Bacteriological examination of the rat-poison which was being used in the restaurant showed the presence of *Salm. enteritidis* (Gaertner).

Discussion

These findings indicate that in all probability there was an epidemic of gastro-enteritis due to *Salm. bovis morbificans* affecting the rodent population in the vicinity of the restaurant at Birmingham, and that unprotected food had been contaminated by the infected rodents. The beef had

been cooked and served hot for lunch, then left on an open dish in the basement kitchen for eight hours before being served as sandwiches to the Bromyard party. It is presumed that the contamination occurred during this interval. Although the rat-poison used in the restaurant was not the vehicle for the spread of the infection, the risks incurred by using such a poison are obvious; and, in view of the fact that methods of food production and storage in hotels, restaurants, and cafés are seldom satisfactory, the continued use of such poisons in these places is a danger to the public health and should be prohibited.

The patients affected in the outbreak were treated symptomatically for the first week of the infection. Thereafter they were all given a course of sulphaguanidine, the dosage varying from 3 to 4 g. by mouth four-hourly by day for four days. Of the 12 patients thus treated, four complained of symptoms of intolerance, and the dosage was accordingly reduced, and in one case the course was terminated. Specimens of stools were taken from each of the affected persons until three consecutive negative specimens had been obtained, the patient then being considered free from infection. These specimens were taken twice a week for the first four weeks and thereafter once a week.

On account of the irregular intervals between the collection of specimens of stools and the small numbers involved, no relation of statistical significance can be shown between the duration of the infective period and the sex of the person affected. It is of interest, however, to note that the average period of duration of infection (i.e., the time from the onset of clinical symptoms to the date when the first of the three consecutive negative stools was obtained) was 24.4 days for the seven men affected and 47.6 days for the five women. The figures are as follows:

Period of Duration of Infection

Males	Females
23 days	39 days
20 ,,	44 ,,
30 ,,	67 ,,
23 ,,	30 ,,
20 ,,	58 ,,
32 ,,	
23 ,,	
Mean, 24·4 days	Mean, 47·6 days

If from these figures are subtracted those relating to the persons who did not receive a full course of sulphaguanidine, then the mean periods of duration of infection are: males, 26.2 days; females, 54.7 days. Thus it seems unlikely that the period of infection was influenced by the sulphaguanidine.

The five female patients and one of the male patients prepared food for consumption in their households. These persons were given instruction in personal hygiene and care in the handling of food. It is satisfactory to note that no secondary cases resulted from this outbreak.

Summary

A brief description is given of an outbreak of food-poisoning in Bromyard district due to infection with *Salm. bovis morbificans*.

Investigations revealed that the infection originated from the consumption of beef sandwiches in a Birmingham restaurant, and that the sandwiches were probably contaminated by infected rodents.

The danger of using rat-poisons incorporating salmonella organisms, especially in food premises, is noted.

The duration of infection in the female patients was approximately twice that in the males.

The evidence from this outbreak suggests that infection with *Salm. bovis morbificans* does not respond to sulphaguanidine therapy.

I would like to express my appreciation of the co-operation and help given by the staff of the Public Health Department and the City Laboratory at Birmingham, and the staff of the Public Health Laboratory at Hereford.

Medical Memoranda

A Case of Undulant Fever Treated by Chloramphenicol

The treatment of undulant fever has until recently been unreliable and unsatisfactory. Methods advocated have included the joint use of sulphonamides and blood transfusion (Holmes and Hughes, 1948; further recommended by Romer, 1949), and the use of "aureomycin" (Galpine, 1949); whilst the American Department of Clinical Investigation of Messrs. Parke, Davis, and Co. claim that six patients with active brucella infection responded rapidly within an average of 2–4 days to oral administration of chloramphenicol ("chloromycetin"; Parke, Davis, and Co., Technical Reference No. 1183, p. 2). This claim was so striking that one of us (T.V.C.) decided to attempt treatment of the next case of acute undulant fever met with in this area, where the infection is not uncommon. Compared with the larger towns and cities, the volume of milk consumed in this district not heat-treated is considerable, and contagious abortion in cattle is widespread.

The case of undulant fever described below responded immediately to oral administration of chloramphenicol. The results seem so good that the method deserves a wider trial. No serious complication was encountered.

Case Report

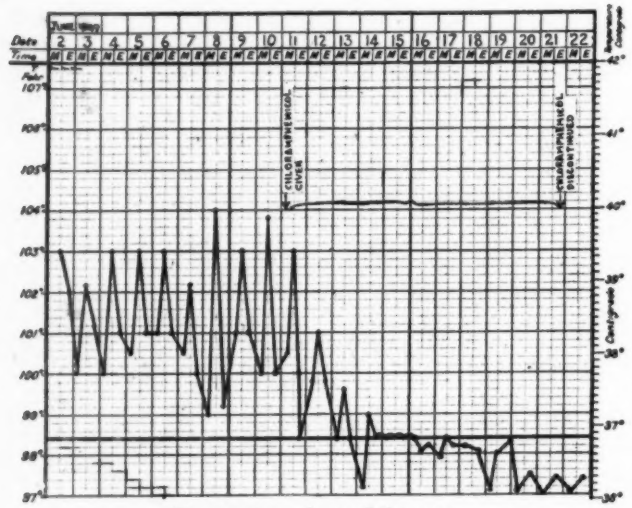
The patient, a man aged 50, was first seen on June 2, 1949; he gave a history of having felt vaguely unwell for the past three to four weeks. Two days previously his afternoon temperature was 103° F. (39.4° C.). The main symptoms were lassitude, sweating, anorexia, constipation, insomnia, pains in bones of back and limbs, and retro-ocular headache. The symptoms were worse in the afternoons. No special physical signs were elicited. (The patient had lived in India for many years, but had been at home and healthy since 1947.) During the next seven days his temperature varied between 100° and 104° F. (37.8° and 40° C.), being usually highest in the afternoon. No localizing symptoms or signs developed.

On June 8 blood was taken for the Widal test, and gave a positive reaction up to 1 in 5,000 against *Brucella abortus* and *Br. melitensis* 1 in 1,250, trace 1 in 2,500. There were also reactions to *Salmonella typhi* H 1 in 125, *S. paratyphi* AH 1 in 50, trace 1 in 125, *S. paratyphi* BH 1 in 125, and N/S Composite Salm. 1 in 125, explained by multiple T.A.B. inoculations in the past. The Vi test was negative. A blood count taken at the same time revealed: haemoglobin, 80% (11.84 g.); red cells, 4,300,000; colour index, 0.93; leucocytes, 5,600 (neutrophil polymorphs 68%, monocytes 7.5%, lymphocytes 24.5%); reticulocytes, 1%.

Blood cultures taken on June 11 failed to yield any positive results, although development of brucella was encouraged by employing liver-infusion media and incubation in a jar containing 5–10% carbon dioxide. Blood-film tests excluded malarial infection.

At this point it was decided that the evidence warranted a trial of chloramphenicol. Treatment was therefore started on June 11. The initial dose was 5 g. (approximately 60 mg. per kg. of body weight), followed up by 0.25 g. every three hours for seven days after the temperature had settled (see Chart)—

total, 27 g. by mouth. Within 24 hours of starting treatment there was definite subjective improvement, which was maintained. The temperature had settled by the fourth day, and has remained normal up to the present time (July 22). On the first two nights the patient showed mild urticarial skin lesions, and for a few hours there was severe pain in the splenic area, but the spleen did not become palpable. The patient is heavily



Temperature chart of the case.

built, and a moderate enlargement of the spleen could easily go undetected. He also had an unpleasant taste in the mouth after taking the drug, particularly if the 0.25-g. dose was exceeded. We had given instructions that if, in error, a dose were missed during the night the succeeding dose should be increased in compensation. At the end of treatment the patient was easily tired, but otherwise he felt well. Convalescence proceeded uneventfully, and he now seems fit.

COMMENT

This case is described because the treatment seems free from risk and can be carried out at the patient's home, whereas any method employing blood transfusion implies admission to hospital and exposure to the hazards of transfusion. We appreciate that our diagnosis is based on a reasonable supposition (agglutination reaction) rather than on the absolute proof which would be given by a positive blood culture. It is known, however, that in only a small proportion of cases of undulant fever due to *Brucella abortus*, estimated at 10–20% (Topley and Wilson, 1945), can a bacteriaemia be demonstrated. Inspection of the temperature chart shows a fall in temperature exactly coincident with the administration of chloramphenicol. At the present time this method of treatment is not cheap, as 27 g. of the substance costs £30 12s., less 33⅓% discount to institutions, plus £6 16s. 1½d. purchase tax—a net total of £27 4s. 1½d. The makers inform us that negotiations are proceeding to eliminate purchase tax—an imposition which seems illogical, especially if distribution of the amounts available is restricted to definite prescriptions and specific infections.

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Sensitivity to Codeine

The following case is recorded because of the rarity of reactions to codeine in spite of its common use and because of the resemblance of the rash to that of scarlet fever.

CASE REPORT

The patient, a woman aged 24 suffering from pulmonary tuberculosis, stated that one night she had been given two "veganin" tablets (containing ¼ gr. (22 mg.) of codeine phosphate) for headache. Next morning she developed an irritation of the whole body and later in the day "a red rash" appeared. On the following day the rash had faded and the irritation had subsided. She also stated that a similar reaction had followed a single dose of 1 dr. (4 g.) of syrup of codeine phosphate (codeine content, 16.2 mg.).

In order to demonstrate the specificity of the reaction, and to study the rash, several months later she was given a test dose of ½ gr. (32.5 mg.) of codeine phosphate at midday. At 5 p.m. she developed irritation of the neck and chest, which rapidly involved the whole trunk and limbs. The irritation was followed by a macular rash, which soon coalesced to give a scarlatiniform appearance. The rash was most prominent on the front of the chest, the abdomen, and lower limbs, but the pruritus was not confined to the area involved by the rash. Both the rash and the irritation were less marked the next day, and during the following day both had disappeared; the irritation, however, remained some hours after the rash had gone.

At no time was there any lesion in the mouth, the patient felt well, and there was no febrile disturbance. Slight desquamation occurred over the lower face only. A blood count at the height of the reaction showed 259 eosinophils per c.mm.

COMMENT

In spite of its widespread use very few cases of sensitivity to codeine have been recorded. Indeed, Seidmann (1943) says that his is the tenth case to be reported.

Scheer and Keil (1934) reviewed the literature and added a further case following 1 gr. (65 mg.) of codeine phosphate. They point out that antibodies cannot be demonstrated by the direct Prausnitz–Küstner method, since codeine itself normally produces an erythemato-urticarial reaction with pseudopod formation when injected intradermally. Using a modified P.–K. technique (serum locally and codeine by mouth), they were unable to demonstrate antibodies in the serum. Scheer and Keil describe the original appearance of the rash as follicular, later taking on a generalized erythematous appearance by coalescence of the broad zone of erythema surrounding the individual follicles. They produced a positive skin-patch reaction with codeine phosphate solution (1 gr. to the ounce), while a similar test with a solution of morphine sulphate was negative, indicating a specific hypersensitivity to codeine, which is all the more significant since the latter differs from morphine only in having a methyl group.

The constant feature of the recorded cases is the pruritus, followed by an erythematous rash, the early phase of which may present as macular or follicular. Usually there are no symptoms apart from the irritation. In Seidmann's case, however, weakness, fatigue, headache, nausea, and redness of the mouth and throat occurred a few hours after ingestion of 15 mg. of codeine phosphate. There was an eosinophilia of 1,080 per c.mm—a finding also recorded by Dittrich (1926). Desquamation has been reported in a few of the cases.

G. K. MACKENZIE, M.B., Ch.B.

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Reviews

FORENSIC MEDICINE

Médecine légale judiciaire. By C. Simonin. Second edition. (Pp. 819; 313 figures; paper cover, 1,100 francs; bound, 1,300 francs.) Paris: Librairie Maloine. 1947.

Psykopatibegreppets bankrutt (Bankruptcy of the Concept of Psychopathy). By Bo Gerle. (Pp. 43; paper cover, 3 kronen; in Swedish.) Lund: Gleerupska Univ.-Bokhandeln. 1947.

The contacts of law and medicine are now so many and various that forensic medicine has split up into a group of specialties, each calling for special training and experience. It is therefore far from easy for one author to cover the whole field; this is the task assumed by Professor Simonin, of Strasbourg, and he has performed it remarkably well. His book is the first of two volumes, and consists of massive chapters on medicine and justice and the medico-legal aspects of injury, sex, poisons, death, identification, and psychiatry: these are the topics covered by the term "*judiciaire,*" social medicine and medical ethics being reserved for discussion in the second volume.

The first chapter contains an excellent sketch of the history of criminology and valuable discussions on juvenile delinquency and malingering. The section on injuries includes comment on cruelty to children, the assessment of disability, and post-traumatic disorders. The chapter on sex deals fully with the whole subject, including perversions, sterilization, abortion, marriage, pregnancy, and paternity. Much information about industrial toxicology is found in the article on poisons; those on death, identification, and psychiatry follow the usual lines.

The handling of so vast a subject might excusably have been purely technical, but the approach is, in fact, philosophical, and Professor Simonin does not conceal his strong moral convictions.

The outstanding features of the work are the author's constant preoccupation with the prevention of crime, and the excellence of the clinical descriptions which abound throughout the book and could be read with pleasure and profit by any medical man. The volume will be useful to a wide variety of specialists, and teachers of forensic medicine outside France will find in it ideas worth incorporating in their own courses of instruction. Reference to any topic is unusually easy because of a good index, a detailed table of contents, the division of the text by many cross-headings, and the free use of small type for matters of detail. The text is elucidated by many drawings, the work of the artists E. Huber and A. Collinet.

Dr. Bo Gerle is a *Dozent* in forensic psychiatry in Lund University and head of the forensic department of St. Lars Sjukhus, a large mental hospital near Lund. His book, a revised and enlarged version of a course of lectures attended by doctors, lawyers, and humanists, discusses the origin and development of the concept of psychopathy, the "psychiatry without psychopathy" of Sjöbring, and the consequences of a modified conception of psychopathy.

The first half of the book is a historical and critical study of the term psychopathy, whose current meaning is "non-intellectual deficiencies making the social adjustment of an individual difficult or impossible." The development of the concept is traced from Pinel's *manie sans délire* and Esquirol's monomania, through Platner's *amentia occulta*, Pritchard's moral insanity, and corresponding ideas of many later students, including Kraepelin, Lombroso, Freud, and Henderson and Gillespie. The conclusion drawn is that the concept of psychopathy includes a variety of unrelated conditions, which Gerle distinguishes, on the basis of Sjöbring's theories, as hypophrenia (post-infective tiredness and apathy), schizophrenia, and ixophrenia (an epileptoid state). The remainder of the book is a discussion of the legal, therapeutic, and educational implications of these concepts. It remains to be seen whether these ideas will be any more durable than their predecessors, and it is important, as the author says, to approach each patient as an individual.

Gerle stoutly defends the unity of personality and the view that a highly developed intellect may be powerless to control serious affective deficiency. This at once raises the question of criminal responsibility and challenges current legal opinion; the question merits full discussion in a separate paper, and Gerle is obviously well qualified to write it. He concludes with a plea for more thorough training in psychiatry for medical students to enable them, as doctors, to deal competently with the various types of psychical abnormality.

Gerle has a limpid style, and if he chose to write in English he would have a wide circle of readers, both medical and legal. Readers of his book would have been assisted by the use of cross-headings and the addition of a summary of the chief conclusions.

RAYMOND WHITEHEAD.

PHYSIOLOGY OF FLYING

Aviation Medicine in its Preventive Aspects. By John F. Fulton, O.B.E., M.D., D.Sc. (Pp. 174; illustrated. 12s. 6d.) London: Geoffrey Cumberlege (Oxford University Press). 1948.

This is a historical survey of the more important researches and developments in altitude or decompression sickness, the physiological problems of pressurized aircraft cabins, the effects of acceleration on man, and safety in flight. It concentrates on the period 1939 to 1946. Experiments to secure impartial data on the respiratory and circulatory changes which occur during acclimatization to the lowered partial pressure of oxygen at altitudes between 23,000 to 29,000 feet (7,000 to 9,000 m.) are described in some detail. This investigation, named "Operation Everest," was carried out at the United States Naval Air Station in Pensacola, Florida. For this purpose four young adults lived for five weeks in a low-pressure chamber fitted with an air-lock, so that observers could enter to make observations and take appropriate samples without being subjected to anoxia. The results showed that acclimatization consists of a series of integrated adaptations to restore the oxygen pressure of the tissues to the normal sea-level value.

Researches in decompression sickness are reviewed, from Leonard Hill's work on caisson sickness in divers in 1912 to those in connexion with aviation, especially during the various phases of the recent war. There is a good description of bubble formation in the blood and tissues of animals and man in relation to "bends," and of such underlying factors as gas tension, hydrostatic pressure, surface tension, and gas nuclei. The practical results of these researches are outlined. The technique is given of the pre-selection test to assess suitability for high altitude operations, and is followed by an account of the prevention or mitigation of "bends" by pre-oxygenation to displace dissolved nitrogen before ascent and by limitation of muscular movements during flight to lessen the formation of bubbles in the blood vessels.

The main physiological problems discussed in connexion with pressurized aircraft concern ventilation and explosive decompression. Little information is given as regards the former, but the section on explosive decompression is reasonably full and valuable. Reference is made to the experiment which proved that no perceptible harm is caused to a fit man by explosive decompression, provided an adequate supply of oxygen is immediately available or a rapid descent made to non-oxygen-requiring altitudes. Survival times for explosive decompression at various altitudes up to 75,000 feet (22,500 m.) are given, as well as the time of useful consciousness without oxygen. These figures have proved of great value to aircraft designers and engineers, who have to provide for emergencies while avoiding weight penalties in the form of unnecessary equipment.

The section on the effects of acceleration is limited to a consideration of centrifugal forces which occur in aerobatics. Due reference is made to the R.A.F. researches, begun in 1939, in an aircraft fitted up as a flying laboratory, with a cine-camera to record the effects of high acceleration under

conditions of aerial combat, the results of which enabled suitable countermeasures to be devised. Then follows a description of centrifugal machines used by the Canadians, Australians, and Americans, on which much fundamental research was done. The results obtained added considerably to our knowledge of the effects of centrifugal forces on man, and culminated in the development of anti-gravity suits, both of the hydraulic and air-pressure types. It is claimed that these suits did much to give Allied fighter pilots ascendancy over the enemy.

The final chapter discusses briefly the problems of safety in flight, including a study of the effects of forces of deceleration on man as demonstrated in aircraft crashes and non-fatal suicidal leaps. The design of aircraft to provide increased safety is considered, and the practical value of seat belts, safety harness, stressing of seats, backward-facing seats, and "ditching drill" are assessed.

H. E. WHITTINGHAM.

A DIGEST OF GYNAECOLOGY

A Pocket Gynaecology. By S. G. Clayton, M.D., M.S., F.R.C.S., M.R.C.O.G. (Pp. 111. 7s. 6d.) London: J. and A. Churchill, Ltd. 1948.

This is the age of digests. As members of the general public we persuade ourselves that we have no time for serious reading and too often turn to the small monthly magazine that feeds us with tasty morsels from current literature. As doctors we receive the weekly journals but too often do not trouble to read them. If we are specialists we view with dismay the monthly publications that pile up on our desks, and frequently console ourselves with the thought that a year book, a survey, or an abstract journal will soon come to hand to spare us the effort of reading the literature as it is intended to be read. If this is our weakness we cannot criticize the harassed medical student in his struggle to keep abreast of the ever-increasing medical curriculum, or deny him the help that a condensed textbook may give. But in both cases the danger is the same. Is the summary or review to be used as a genuine refresher or is it to be the means of escape from serious reading—the pander to laziness?

These thoughts are aroused by Dr. Clayton's book. As a condensed account of gynaecology this is an excellent production, and the considerable amount of up-to-date information presented in small space reflects much credit on the author and publishers alike. But whether the medical student will benefit by turning from his well-known textbook to a new "cram" book during his period of final revision is a matter on which I, for one, have serious doubt.

The usual gynaecological subjects are set out in orthodox fashion in 109 small pages of text. Anatomy, physiology, embryology, and pathology all receive due notice. The two final chapters deserve special attention—one is on gynaecological symptoms and the other on special gynaecological treatment, including a brief account of drugs and endocrine preparations, of *x* rays and radium, of gynaecological operations, and even of contraception. A few necessary illustrations are included.

The preface states that there is "economy of words." This is certainly true, even to the extent of the omission of verbs from many sentences. The text is generally well corrected; but there are a few slips, such as an obvious error of spelling on page 3 and the occasional use of a singular verb with a plural subject. In criticism of the subject matter it may be questioned whether it is not misleading to speak of "slight fever" as being a symptom experienced by normal women during menstruation. Condylomata acuminata are not necessarily gonococcal in origin, nor do they appear "after a few days." Stilboestrol in doses as large as 5 mg. daily is fairly certain to cause nausea and depression in a post-menopausal woman. These are minor criticisms in an otherwise excellent, if very condensed, presentation of orthodox gynaecological teaching. The book is exactly what it claims to be: it is a pocket gynaecology, and a remarkably good one at that.

J. CHASSAR MOIR.

GUIDE TO TREATMENT

Obstetrics and Gynaecology. By Beatrice M. Willmott Dobbie, M.A., M.B., F.R.C.S., D.M.R.E. (Pp. 358; 23 illustrations. 20s.) London: H. K. Lewis and Co. 1948.

Textbooks of obstetrics and gynaecology abound in British medical literature; it may be asked, therefore, whether there is a place for further works on this subject. Miss Dobbie's new book does not attempt to cover the same ground as the usual textbooks, but rather to provide a simple guide to practical treatment. It is addressed primarily to the general practitioner, and fulfils admirably the needs of the busy doctor who requires a handy work of reference or who wishes to refresh and bring up to date his knowledge. Simplicity of expression and sound common sense, the keynotes of this book, make it thoroughly readable.

The general layout of the work is good, and the advice it contains is generally excellent. Criticism is thus confined to a few details. The dose of ergometrine by intravenous injection should not exceed 0.25 mg., and 0.125 mg. is often sufficient. Administration of 0.5 mg., as recommended, is likely to cause symptoms. Contradictory advice is given concerning the treatment of cervicitis. In the chapter on post-natal care (p. 205) it is stated that cauterization can be carried out in the out-patient department, while cauterization under anaesthesia is recommended in the section on gynaecology (p. 292). Most cases of cervicitis can in fact be treated as out-patients, thus obviating the need for hospitalization or general anaesthesia. The section on the toxaemias of pregnancy is sketchy and inadequate. More precise advice is needed on the normal level of blood pressure, and a great deal more detail should have been included on the management of cases of essential hypertension in pregnancy and of pre-eclamptic toxaemia. The illustrations are adequate, though some appear unfinished in comparison with those appearing in other books.

The psychological aspects of obstetrics and gynaecology are not neglected, and the sections "Telling the Patient" are especially important. Miss Dobbie shows her wide experience in this book, which, though containing little new or original, fulfils the purposes for which it is intended and will thus prove a valuable addition to current medical literature.

JOSEPHINE BARNES.

SURGICAL SUMMARY

Handbook of Surgery. By Eric C. Mekie, M.B., Ch.B., F.R.C.S.Ed., F.I.C.S., and Ian MacKenzie, M.B.E., M.B., Ch.B., F.R.C.S.Ed. With foreword by the late Sir John Fraser, Bart. Second edition. (Pp. 764; illustrated. £1.) Edinburgh: E. and S. Livingstone. 1949.

A second edition of this book (which first appeared in 1936) has Mr. Ian MacKenzie, now of Newcastle-upon-Tyne, as joint author. There has been considerable revision, but, although there are 764 pages, perhaps rather many for a handbook, there are only 29 figures. These are good, but so much text unrelieved by diagrams or figures is inclined to make reading dull, and the criticism of the first edition remains—that more line drawings interspersed through the print would add considerably to the attraction of this otherwise excellent student's guide. Fig. 11, p. 308, is inaccurate in view of recent knowledge of root distribution, and I could find no mention of either the costo-clavicular or scalenus syndromes, each of which is of frequent occurrence, whereas arthrogryposis multiplex congenita (p. 594) is less common so far as the student is concerned. There is an account of cervical rib in which it is stated that Hudson (no initials, no reference) showed that the vessels and nerves can be compressed between the free end of a cervical rib and the anterior scalene muscle, and that the radial pulse is diminished on the affected side but becomes normal in volume when the arm is elevated above the shoulder (p. 212). This is not in accord with our experience, which is the reverse. The statement on page 299 that the majority of intradural extramedullary spinal tumours are meningiomas is not accurate, as the neurinoma is commoner.

These are minor criticisms of what is essentially a sound text in which for the most part the matter is well balanced.

The book may be described as an excellent summary of the teaching of the Scottish school of surgery and a sound guide for the student of the subject. Like most post-war articles the price has increased, in this case from 12s. 6d. to £1.

LAMBERT ROGERS.

ADOLESCENCE

Adolescence. Its Social Psychology. By C. M. Fleming, M.A., Ed.B., Ph.D., F.B.Ps.S. The International Library of Sociology and Social Reconstruction. (Pp. 261. 16s.) London: Routledge and Kegan Paul 1948.

This is an important and valuable book. It sums up recent research on the physiology and psychology of adolescence, as well as its educational and social aspects. This recent work has tended to upset several preconceived ideas, most of them dating from Stanley Hall's generalizations, which have been too readily accepted both by teachers and psychologists.

The book points out the wide variations of the normal personality and stresses the importance of the individual's fundamental needs. Considerable attention has in the past been placed on innate dispositions and instincts, and considerable variations in the strength of these in different individuals has been postulated. A more practical attitude may be to think more in terms of the needs of the individual, founded no doubt on the relative frustration and gratification of instincts. The author points out how the failure to find gratification of the needs in one generation may be reflected in the behaviour of the next, and how difficulty of adjustment and social misbehaviour may thus follow through several generations.

Delinquency is an expression of distress, and this distress is due to failure to achieve the fundamental needs, which are listed as love, security, new experience, recognition, acceptance, respect, and success. The dignity and individuality of the child must be recognized and respected. Growth, both mental and physical, is not a smooth process, and may be influenced by environmental factors operating at any particular time even more than by innate capacities. If this is so, it is not easy for educationists to answer the questions about which they would so much like to be definite—namely, what are the difficulties and therefore the requirements of any group of children at different stages of their development? How can future success in different activities be predicted from present performances? In other words, a cross-sectional observation, such as an intelligence test at a particular age, is not so reliable in foretelling the future development of the child as many people would like to believe. Ultimate capacity may be more influenced by limitations of experience, both social and educational, than by innate ability. The way all sorts of types of young men and women have learnt and adapted themselves to quite unfamiliar trades in the relatively short period given to training for modern technical warfare illustrates this. Young people require not only intellectual food but the influence of the right sort of group of their peers, as well as guidance by those more experienced than themselves in formulating a philosophy of life which should be a map of how they may live.

Vocational guidance is of little use if founded on single interviews, but it should be based on long-term observation of the young person. Means must therefore be found to obtain and record such observation by several persons if our youth are to be helped as they deserve. Doctors, teachers, sociologists, and psychologists will all find much in Dr. Fleming's book to stimulate thought. Presented as it is, without prejudice or bias, it is to be highly recommended.

R. G. GORDON.

Review of Dentistry for State Board Examinations, by Vincent R. Trapozzano, D.D.S., F.A.D.P. (pp. 661; 32s. 6d.; London: W. B. Saunders Co.), is a book in which dental surgery becomes a series of quick questions and snappy answers. It may possibly be useful to the student preparing for a *viva voce* examination, provided that the examiner asks the correct questions, or may even be more useful to the examiner to provide him with questions that he should ask and the reply that he should automatically be given.

BOOKS RECEIVED

[Review is not precluded by notice here of books recently received]

Coronary Artery Disease. By E. P. Boas, M.D. (Pp. 399. No price.) London: H. K. Lewis. 1949

The Principles of Scientific Research. By P. Freedman, B.Sc., M.I.E.E., F.I.E.S. (Pp. 222. 15s.) London: Macdonald. 1949.

Ectopic Pregnancy. By K. M. Masani, M.D.Lond., F.R.C.S.Eng. (Pp. 165. 12s.) Bombay: The Popular Book Depot. 1949.

Testing School Children. By W. Stephenson, M.A., M.Sc., Ph.D. (Pp. 127. 12s. 6d.) London: Longmans, Green and Co. 1949.

A Primer of Electrocardiography. By G. E. Burch, M.D., F.A.C.P., and T. Winsor, M.D., F.A.C.P. 2nd ed. (Pp. 245. 22s. 6d.) London: Henry Kimpton. 1949.

The Common Form of Joint Dysfunction. By W. Kaufman, Ph.D., M.D. (Pp. 208. No price.) Brattleboro, Vermont, U.S.A.: E. L. Hildreth. 1949.

Neurosurgical Pathology. By I. M. Scheinker, M.D. (Pp. 370 45s.) Oxford: Blackwell Scientific Publications. 1948.

Diseases of the Liver, Gallbladder, and Bile Ducts. By S. S. Lichtman, M.D., F.A.C.P. 2nd ed. (Pp. 1,135. 50s.) London: Henry Kimpton. 1949.

International Congress on Mental Health, London, 1948. Edited by J. C. Flugel, D.Sc. (3 vols. £2 10s.) London: H. K. Lewis. 1949

A Short Practice of Surgery. By H. Bailey, F.R.C.S., and R. J. McNeill Love, F.R.C.S. Part 5. 8th ed. (Pp. 1,050. 32s. 6d (set)) London: H. K. Lewis. 1949.

Cunningham's Manual of Practical Anatomy. Edited by J. C. Brash, *M.C.*, M.A., M.D., F.R.C.S.Ed., F.R.S.Ed. Vol. 3. 11th ed. (Pp. 513. 21s.) London: Oxford University Press. 1948.

Bodily Reactions and Examination of Systems of Therapeutics. By K. L. Daftari, B.A.Cal., B.L.Cal., D.Litt. (Pp. 235. 6 rupees 8 annas.) Bombay: Hind Kitabs 1949.

An Outline of Psycho-Analysis. By Sigmund Freud. Translated by J. Strachey. (Pp. 84. 8s. 6d.) London: The Hogarth Press. Institute of Psycho-Analysis. 1949.

Three Essays on the Theory of Sexuality. By S. Freud. (Pp. 133. 10s. 6d.) London: Imago Publishing Company. 1949.

Child Health Services and Pediatric Education. (Pp. 270. 20s.) London: Geoffrey Cumberlege. 1949.

Cystoscopy and Urography. By J. B. Macalpine, D.Sc., F.R.C.S. 3rd ed. (Pp. 570. 63s.) Bristol: John Wright and Sons, Ltd. 1949.

A Journey Round My Skull. By F. Karinthy. 3rd ed. (Pp. 288. 8s. 6d.) London: Faber. 1949.

A Descriptive Atlas of Radiographs. By A. P. Bertwistle, M.B., Ch.B., F.R.C.S.Ed. 7th ed. (Pp. 622. 50s.) London: Henry Kimpton. 1949.

Canned Foods. By J. G. Baumgartner. 3rd ed. (Pp. 278. 15s.) London: J. and A. Churchill. 1949.

Rehabilitation of the Tuberculous. By H. A. Pattison, M.D., F.A.C.P. 3rd ed. (Pp. 250. 22s. 6d.) London: Baillière, Tindall and Cox. 1949.

Transactions of the American Ophthalmological Society, 1948. Vol. 46. (Pp. 676. No price.) Philadelphia: American Ophthalmological Society. 1948.

A Practice of Orthopaedic Surgery. By T. P. McMurray, C.B.E., M.B., F.R.C.S.Ed. 3rd ed. (Pp. 444. 30s.) London: Edward Arnold and Co. 1949.

A Surgeon's World. By M. Thorek, M.D. (Pp. 333. 12s. 6d.) London: Robert Hale. 1949.

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A VIRUS IN MOUSE CANCERS?

In March of this year Professor Gye reported in a lecture[1] that he and his colleagues of the Imperial Cancer Research Fund had succeeded in transmitting mouse sarcomata by means of tissues which had been frozen and dried. The importance of such a finding could not be doubted. Until then there had been an apparently complete contrast between the bulk of mammalian tumours having no obvious continuing cause and a few growths, particularly fowl sarcomata, in which was evident the activity of a virus as a continuing cause of the malignancy. Professor Gye's report gave reason to believe that now, in mammalian growths also, was to be found a virus-like neoplastic agent. He made quite clear his belief that in the dried and even in the frozen tissues no surviving intact cell could be held responsible for the malignant activity.

This report caused much comment, discussion, and criticism. Scientists are perforce a race of sceptics, and a discovery as important as this was not likely to be accepted generally until it had been confirmed by others and until the interpretation was beyond doubt. Many have therefore awaited with eagerness the full technical details which will permit others to confirm—or refute—the claims made. The foundation of all the work consists of Dr. James Craigie's improved devices, especially those for finely mincing and for drying tumours; a description of these is still in the press. Meanwhile, we publish to-day three very important papers by Miss Ida Mann; these make it clear that the new techniques will give results not only with mouse sarcomata but with adenocarcinomata also. They go far to answer the questions we raised in discussing this matter in March.[2]

It is now plain that it is not just a few mouse tumours which can be transmitted by means of frozen or dried tissue, and that a principle is concerned applying equally to epithelial and to connective-tissue growths. Miss Mann's results also shed light on what is potentially the most controversial question of all: is it certain that these violently treated tumours do not still contain some living cells? Until this point is proved all is in doubt. Some pathologists will find it impossible to believe that a complicated mammalian cell can survive thorough drying; and the histological evidence supports their doubts. Others will wonder if such survival may not after all be possible, particularly as the alternative is the abandonment of all orthodox views on the causation of cancer. Discussion could go on indefinitely in the realms of metaphysics and histology. Fortunately there seem to be ways of by-passing this obstacle.

A tumour virus causing sarcomata would be expected to infect wherever in the body it was introduced; it would find susceptible connective-tissue cells everywhere. But one causing carcinomata would be epitheliotropic and could hardly do so unless placed in juxtaposition to the right kind of epithelial cell. One can expect therefore to be able with epithelial growths to distinguish clearly between the results of transplanting an odd surviving cell and infecting cells anew with an active agent. A graft might grow anywhere; new infection could occur only where suitable epithelial cells were present. Where we are concerned with an agent believed to cause mammary tumours in mice we are, however, up against a difficulty, for mammary tissue exists almost everywhere in the mouse's subcutaneous tissue; there are rudiments even in male mice. So it is not surprising that frozen or dried mammary tissue is effective wherever it is introduced subcutaneously in mice of either sex. Cell grafts of the adenocarcinomata, however, will grow in the peritoneal cavity, where there are no mammary cells. Miss Mann's results show that the frozen adenocarcinomata, which grow readily in the subcutaneous tissues, fail to grow on intraperitoneal injection, or do so rarely and in circumstances where the carrying in of a few mammary cells on the needle cannot be excluded. There is thus an apparent qualitative difference between the results of propagation with cell grafts and with frozen tumour. Proof derived from this type of experiment might easily be made more convincing. Quantitative tests with serial dilutions of live cell suspensions on the one hand, and of dried or frozen tumour on the other, introduced (*a*) subcutaneously and (*b*) intraperitoneally, might bring out the fundamental distinction in behaviour even more clearly. Better still, experiments with carcinomata other than mammary ones should yield decisive answers. If it is proved that the successful transmission with dried or frozen tumour tissue depends on something other than a surviving tumour cell it is a reasonable working hypothesis, on the analogy of the fowl tumours, that the active agent is a virus. The agent seems, however, to be a very labile one; so it may not be easy to apply the necessary tests to determine whether it can be justly placed in that category.

Some of Miss Mann's experiments were with spontaneous mouse cancers in which Bittner's milk factor—

[1] *British Medical Journal*, 1949, 1, 511.
[2] Ibid., 1949, 1, 531.

or virus—is concerned. Here is at first sight a discrepancy. If these growths are "caused by a virus," how comes it that the Bittner milk factor produces them only after months and only in the presence of suitable hormonal activity, while the frozen cancer tissue is effective within days or weeks and in mice of either sex? Why is the milk factor relatively stable and the activity of the frozen tumour highly labile? It is suggested—but the thesis is not elaborated at all—that the virus can exist in two forms, one latent and presumably stable and the other active but labile. It is further suggested that the effect of oestrogen in male mice carrying the Bittner virus is to precipitate a change from the latent to the active form. These are interesting speculations, but the workers in the Imperial Cancer Research Fund will be wise not to try to move too fast. They have made an important advance, but the ground gained will need consolidating. Most pathologists have for years turned either a blind eye on the virus theory of cancer or at best a suspicious and wary one. Every item in the "newer knowledge" will have to be proved to the hilt, every step will have to be repeatable in other laboratories, every deduction shown to be inevitable. There is every hope that in the end the results will constitute one of the brightest chapters in cancer research.

BACTERIAL FOOD-POISONING

During the last ten years there has been a great increase in the number of recognized outbreaks of bacterial food-poisoning in this country. Improved diagnosis no doubt partly accounts for this, but much of the increase is real, and during the war years was associated with the introduction of communal feeding, often supervised by workers with little knowledge of food hygiene. It is important to distinguish the "infection" and the "toxin" types of food-poisoning. In the infection type the patient has ingested living organisms, usually of the salmonella but sometimes of the dysentery group. After an incubation period of 6 to 40 hours the illness begins suddenly with severe headache, vomiting, diarrhoea, and abdominal pain. There is commonly some rise of temperature. Patients usually feel ill for about a week; in debilitated subjects the infection may prove fatal. In the toxin type, which is most often due to *Staph pyogenes*, enterotoxin has been preformed in the food and consequently takes rapid effect—the incubation period being half to four hours. The illness is more severe but of shorter duration than the infection type, so that the symptoms are over within 24 hours. Food-poisoning caused by enterotoxin rarely proves fatal. Other organisms, such as *Proteus*, *Bact. coli*, and streptococci of *viridans* type, have with less certainty been suspected to cause food-poisoning.

The salmonellae most frequently responsible for food-poisoning are *Salm. typhi-murium* and *Salm. enteritidis*, formerly known as the aertrycke and Gaertner bacilli. They are both natural pathogens of rats and mice, whose excreta may thus contaminate food, and they are not uncommon in duck eggs. *Salm. enteritidis* is also a constituent of certain "rat viruses" used for the destruction of rodents. A report by Dr. M. J. Pleydell in this issue of the *Journal* shows how the contamination of food in a restaurant by infected rodents can cause an outbreak of food-poisoning. Other hosts of these organisms, of which there is a large number of named species, are pigs and cattle. Pork and beef may thus come under suspicion, and milk may sometimes contain *Salm. dublin*, which is the cause of a disease of cows. During the war food-poisoning was often traced to imported dried eggs, in which many new salmonella species were introduced into this country. In a recent issue of the *Journal* (July 16, p. 186) an outbreak of food-poisoning at a London hospital was described. *Salm. typhi-murium* was isolated from a number of those attacked, and there was little doubt that the vehicle of infection was a pudding made with duck eggs. Chronic human carriers are rare, but infection can arise from a temporary excreter who may have few or no symptoms. In another recently reported outbreak of food-poisoning among schoolchildren in Yorkshire (July 23, p. 239) milk supplied to the schools concerned was found to contain *Salm. typhi-murium*. A cowman at a farm supplying milk to the schools had been ill with diarrhoea and vomiting just before the outbreak, but had carried on with his work. In the infection type of food-poisoning the laboratory may help by identifying the organism in the faeces or vomit of the victim and in the suspected food, and by tracing the source and path of infection. The first duty of the investigator is therefore to secure any remains of the suspected meal before they can be discarded.

Food may be contaminated with staphylococci transferred by the fingers from the nose of food-handlers or from infected cuts or septic lesions. There is a high nasal carrier rate of coagulase-positive staphylococci in the general population. Not all of these organisms can produce enterotoxin, for the presence of which there is no good laboratory test other than those requiring a human volunteer, but the bacteriologist can help by finding whether the food contains large or small numbers of staphylococci and by identifying their serological and bacteriophage type with that of the organisms found in the food-handlers and possibly in the victims. There is a significant association of one particular type, 6/47 IIIc, with food-poisoning outbreaks. It must be

remembered that the enterotoxin is heat-resistant and that bacteriological examination of the offending food and of specimens from the patients may therefore give negative results.

The foods commonly associated with food-poisoning are those which are handled during preparation and in which bacterial multiplication can take place. They include brawn, meat pastes, pressed beef, gravies and sauces, cream and custard fillings, and ice-cream. The taste and appearance of the food may be unaltered. A factor in most outbreaks is the keeping of food at some stage in a place which is insufficiently cool. In this way, for example, organisms in reconstituted dried egg readily multiplied to a dangerous concentration overnight at warm-room temperature. The general measures for prevention of these outbreaks are clear. Some of them, such as rodent control, the hygiene of slaughter-houses, and the adequate cooking of such foods as duck eggs, have already been indicated. Food should be prepared and served by clean workers, cleanly clad. They should be trained to report even trivial diarrhoea, cuts, and septic lesions, and they should have satisfactory hand-washing facilities. Manual handling of food should be reduced to a minimum, food wrappings and covers used where possible, and foods kept cool between the stages of preparation and during storage. Not least important is the hygiene of the kitchen: apart from its construction, the lighting, ventilation, proofing against flies and vermin, and facilities for the cleansing of utensils should all be of a high standard. By the intelligent application of common-sense principles it should be possible to minimize at least one menace of the warmer weather.

P.R.C.S. AND P.R.C.O.G.

Lord Webb-Johnson, as we announced in last week's *Journal*, has been succeeded as President of the Royal College of Surgeons by Sir Cecil P. G. Wakeley, and thus brings to an end a memorable period of office. As Sir Alfred Webb-Johnson he was elected P.R.C.S. in 1941, a year before the publication of the Beveridge Report, which, among other things, led up to the introduction of the National Health Service last year. Lord Webb-Johnson guided the affairs of the College of Surgeons during the greater part of the war, but, in spite of the difficulties inseparable from the time, he planned wisely and well, building up the College to a height of efficiency and enterprise not witnessed before. Departments were established and professorships endowed for anatomy and pathology; in the College laboratories practical teaching was made available for postgraduate students seeking higher qualifications; a research chair in ophthalmology was instituted; and under the new charter faculties in dental surgery and in anaesthetics have been established in the College. Under Lord Webb-Johnson the Royal College of Surgeons has become not only an international centre for teaching and research but also a social centre where Fellows and Members may meet each other at lunch and dinner. In a time of stress and controversy he held firm, in the face of much opposition, to what he believed to be for the good of his College and of the medical profession. His successor, Sir Cecil Wakeley, has a hard task to follow in office a man who has achieved so much. Those who know Sir Cecil Wakeley in his combined capacity as surgeon and editor will wish him success in the distinguished position he now holds.

Professor Hilda Lloyd has been elected President of the Royal College of Obstetricians and Gynaecologists in succession to Sir William Gilliatt. She is the seventh President of the Royal College, which was founded in September, 1929, as the British College of Obstetricians and Gynaecologists, and she is the first woman to hold that office. Mr. William Gilliatt (as he then was) took office in September, 1946. He was knighted in the Birthday Honours in 1948, and in November of that year attended Princess Elizabeth when her son was born. Professor Hilda Lloyd is professor of obstetrics and gynaecology in the University of Birmingham.

The burden of office in these days falls heavily upon the Presidents of the Royal Colleges; indeed, to be President is now almost a full-time occupation. Those who govern the destinies of the Colleges may well see fit to devolve more responsibility on to permanent officials, so that the President may have more opportunity to carry on his professional work.

THE AETIOLOGY OF CONGENITAL MALFORMATIONS

The statistical significance of foetal malformation as a frequent cause of stillbirths and neonatal deaths has been known for a long time and is easily demonstrated. Recently the possible causes of malformations have been studied with increasing intensity. The importance of the subject in preventive medicine can be judged from Malpas's[1] finding that either anencephaly, hydrocephaly, spina bifida, or mongolism was present in 1% of all infants born at the Liverpool Maternity Hospital. The influence of heredity in these conditions is very difficult to determine, though studies on familial cases have been made by Schade,[2] Penrose,[3] and Murphy.[4] Experimental and clinical evidence about the environmental factors which are associated with the development of malformations is, however, rapidly accumulating. Working in the field already investigated by Warkany, who induced malformations in the offspring by restricting the diets of the mothers, Gillman and his colleagues[5] have reported that malformed offspring are regularly produced if female rats are saturated with trypan blue injected before pregnancy begins and during its early stages. Injections were given at regular 14-day intervals, and it was found that when an injection fell on the eighth day of pregnancy or thereabouts more than half the offspring were

1 *J. Obstet. Gynaec. Brit. Emp.*, 1937, **44**, 434.
2 *Erbarzt.*, 1939, **7**, 116.
3 *Ann. Eugen. Camb.*, 1946, **13**, 73.
4 *Congenital Malformations*, 1947, Philadelphia.
5 *S. Afr. J. med. Sci.*, 1948, **13**, 47.
6 *Amer. J. med. Sci.*, 1947, **214**, 605.
7 *Proc. Soc. exp. Biol., N.Y.*, 1947, **66**, 608.
8 *Acta opthal., Kbh.*, 1947, **25**, 353.
9 *Nord. Med.*, 1948, **37**, 409.
10 *Arch. Dis. Childh.*, 1948, **23**, 237.
11 *Amer. J. Dis. Child.*, 1947, **74**, 147.

malformed. The commonest conditions were hydrocephaly and spina bifida.

These writers consider that, since the dye does not enter the foetus, the effect is analogous to that produced by virus infections (such as rubella) and is due to disordered maternal metabolism. This interpretation would seem to agree with the views expressed by Gruenwald,[6] who suggests that foetal changes may be secondary to the toxic effects of rubella in the mother. On the other hand, Hamburger and Habel[7] infected chick eggs with influenza virus and found that this impaired the growth of the embryos and caused microcephaly. Similar injection of mumps virus increased the liability of the chicks to develop malformations which otherwise occurred spontaneously in the stock animals. This work tends to support the views of Bardram and Broendstrup,[8] who examined eight children with eye disease (cataract or retinal degeneration) whose mothers had had rubella in the first two months of pregnancy. The pathology of virus infection in the developing embryo would scarcely be expected to follow the same pattern as infection in the adult.

A perplexing feature of all these investigations is the variety of malformations apparently due to the same cause as well as the variety of causes leading to similar end-results, though in the case of maternal rubella the picture is becoming clearer. Grouping together all kinds of foetal defects, Grönvall and Selander[9] found four or five cases of maternal rubella and five cases of maternal mumps among 354 mothers of malformed infants. They estimated that these numbers, though small, were far in excess of the expected numbers of maternal infections of this kind based on a large random series of births in Sweden. Retinal degeneration and deafness were found in the children of the mothers who had had rubella, and mongolism and defects of the nervous system in the children of the mothers who had had mumps. Landtman[10] compared the maternal histories of 73 malformed offspring with a control group. He found that acute infectious disease had occurred during the first three months of pregnancy in 12 (16%) of the mothers of the malformed children, but in only three (1.5%) of the mothers of 200 normal children in the control group. Influenza was the commonest infection, and the associated abnormalities ranged from spina bifida to congenital heart disease and naevus. The greater liability of older mothers to bear malformed children, many times previously observed, was confirmed. This is particularly noticeable for mongolism. Ingalls[11] has commented upon it and suggested that the causes of mongolism are multiple: he includes many pathological uterine conditions and intercurrent infections as aetiological factors.

It seems now to be accepted that maternal illness, especially when due to virus infection, occurring in the early months of pregnancy, may frequently be a contributory cause of foetal malformation and occasionally the whole cause. There are also genetical causes less easily controlled. The results of recent work on this subject, previously considered one of the most intractable problems in medicine, are encouraging. But the modes of action of abnormal genes and abnormal environments on the developing embryo are extremely obscure, and there is sometimes a tendency to lose sight of the ordinary scientific aim of finding specific causes for given effects.

PORTAL HYPERTENSION

Since surgeons have developed the technique of venous anastomosis the outlook for the sufferer from portal hypertension has improved. Without operation the patient with liver cirrhosis has only a 50% chance of surviving a year after the first haematemesis,[1] and for patients with Banti's syndrome the prospects are also gloomy. Until a few years ago surgery could do little for these patients, for Morison's operation of omentopexy did not increase the survival time.[2] Since 1945, however, through the development of the vitallium-tube technique of Blakemore and Lord and the improvements in suture anastomosis developed by Gross and Blalock, it has been possible to make a junction between the portal and systemic venous systems, with consequent relief of the portal hypertension.

Several series of cases are now available for analysis, the largest being that of Blakemore,[3] who has followed the progress of 58 patients for up to three and a half years after operation. The principal indication for a venous anastomosis is persistent and protracted haematemesis from oesophageal varices, which, according to Linton and his colleagues,[4] can and should be demonstrated by barium swallow in nearly all cases. These authors have found that the injection of sclerosing agents into the varices does not stop or prevent bleeding, one of their patients having been treated thus 15 times without benefit. Splenectomy, too, is not a reliable treatment in portal hypertension,[5] except in cases of thrombosis limited to the splenic vein, and a number of patients with Banti's syndrome have required subsequent venous anastomosis because of continued haematemesis. If the patient is unfit to withstand the bigger operation, ligation of the splenic artery, which is followed by atrophy of the spleen, is reported to have given good results.[6] Those with most experience[1 4] are agreed that splenectomy alone should not be done in cases of Banti's syndrome if there is evidence of portal hypertension, since the chances of successfully anastomosing the splenic and renal veins at a later date are thereby greatly reduced, and anastomoses using smaller veins, such as the inferior mesenteric, have given disappointing results.

Linton and his co-workers[4] state that any surgeon who performs splenectomy in Banti's syndrome should be prepared to make a spleno-renal vein shunt at the same time. This is the type of anastomosis now usually performed. It is preferred to the portacaval shunt because the latter is more difficult, and sometimes impossible, to perform, and it is more dangerous to important structures such as the hepatic artery and the common bile duct. Removal of the spleen is desirable, since this reduces the portal circulation by 30 to 40%. Furthermore, there is evidence from experimental work that complete diversion of the portal blood away from the liver leads to slight functional and structural derangements in that organ. Of the spleno-renal anastomoses, that now preferred is a sutured junction between the end of the splenic and the side of the left

1 Blakemore, A. H., *Gastroenterology*, 1948, **11**, 488.
2 Cates, H. B., *Arch. Intern. Med.*, 1943, **71**, 183.
3 *Ann. Surg.*, 1948, **128**, 825.
4 *Surg. Gynec. Obstet.*, 1948, **87**, 129.
5 Learmonth, J. R., and Macpherson, A. I. S., *Lancet*, 1948, **2**, 882.
6 Everson, T. C., and Cole, W. H., *Arch. Surg.*, 1948, **56**, 153.
7 Johns, T. N. P., *Surg. Gynec. Obstet.*, 1947, **84**, 939.
8 Lord, J. W., Jr., *Surgery*, 1948, **23**, 550.

renal vein. This has the merit of preserving the left kidney, and the anastomosis remains patent in experimental animals much more often than does end-to-end anastomosis by suture.[7] Vitallium-tube anastomoses are even more liable to become thrombosed and are no longer used in this operation by their originators.[1 8]

The choice of cases suitable for operation is important if the mortality rate is not to be excessive, and the degree of liver damage appears to be the principle criterion, apart from general considerations. In Linton's series the operative mortality was 71% in the cases with cirrhosis of the liver, but those without liver damage all survived. One point of practical importance is that the severely damaged liver does not appear to metabolize sodium citrate, and after a large transfusion of citrated blood the power of coagulation may be lost. One patient received no less than 48 pints (25 litres) of blood—mostly his own removed from the abdomen by suction—and did not survive. However, Blakemore had only three deaths in 39 cases with liver cirrhosis—all three had severely damaged livers—and it seems that the operation in patients with cirrhosis is not unduly hazardous, especially if cyclopropane is used as the anaesthetic, provided the serum albumin is not too low and the alkaline phosphatase not too high.

On completion of the anastomosis the portal pressure falls from up to 500 or more millimetres of saline to about 200 mm., and the subsequent progress of most of the patients has been very satisfactory, with a notable freedom from further haematemeses and a great improvement in the general health. There can be no doubt that the surgical relief of portal hypertension is an important development which has greatly improved the immediate outlook for sufferers from this disorder. Whether or not the anastomosis remains patent and the improvement is maintained indefinitely will be known as time passes, but certainly relief for up to four years is a great advance on previous treatments and holds out much hope of permanent benefit.

PERTUSSIS AND MENTAL DEFICIENCY

In the aetiology of mental deficiency heredity is not the only important factor. Injury or infection of the brain can produce irreversible damage, and many cases of mental defect are due to birth injuries, especially in premature babies. The possibility that the common infectious diseases of childhood may in some cases interfere with normal mental development has recently been considered, and Levy and Parry[1] have provided some evidence to support the hypothesis that an attack of whooping-cough may cause mental deterioration. They investigated a group of 1,000 children admitted to a special school for intellectually retarded children in Washington, with a view to determining whether an attack of whooping-cough at any age might have been the sole factor responsible for a child's backwardness. The records of these 1,000 children showed that 350 had a history of whooping-cough before admission. A questionary was sent to the parents or guardians, but replies were obtained only in 213 cases, and of these 85 had to be excluded because either the attack of pertussis was denied or insufficient information was given. After a careful study of all the relevant factors the authors concluded that in 20 (15.6%) of the 128 children there was a definite causal relationship between the attack of whooping-cough and the intellectual retardation that followed. The age of attack was important; the number of children whose mental retardation was attributed solely to whooping-cough was 14 (29.2%) of the 48 children who had the disease before they were 2 years old, 5 (14.3%) of the 35 children attacked between ages of 2 and 5, and only 1 (2.2%) of the 45 children attacked after 5 years of age. The conclusion that an attack of whooping-cough can lead to serious mental deterioration seems to be justified. The children studied had intelligence quotients of 70 or less, and border-line cases were not included. It is therefore possible that whooping-cough may be a cause of dullness among the general population of children.

[1] *Amer. J. ment. Defic.*, 1948, **52**, 217.

SWIMMING-POOLS AND RESPIRATORY DISEASE

Among the conditions said to be transmitted on occasions by swimming-bath water are sinus and respiratory infections, enteric fever, skin diseases, Weil's disease, and some of the virus infections of childhood. As Suckling[1] has pointed out, the danger has probably been exaggerated, and it is likely that in many cases, especially in bathers whose vitality has perhaps been lowered by prolonged immersion, the disease is transmitted by more direct forms of contact. It is generally agreed that the risk is greater in the case of sinus, eye, and ear infections, and with respiratory diseases, than with intestinal infections. In this connexion a recent report by Gallagher[2] is of interest. The author, who is physician to a boys' boarding school in Massachusetts, noted the incidence of respiratory disease in the boys during the first eight weeks of seven successive years—this being the season when such disease was most prevalent. The school had an indoor chlorinated swimming-pool, and the boys were grouped as regular swimmers, occasional swimmers, and non-swimmers; the observations refer mainly to the first and last groups. The non-swimmers were not necessarily unable to swim, but were boys who chose to go in for some other form of sport. Variable factors in the two groups made assessment of the findings difficult, and figures from any one year might clearly have been misleading, but certain observations taken from the series as a whole are perhaps significant. The average number of admissions to the school hospital on account of respiratory illness was about 14% greater for the regular swimmers than for the other groups. Acute sinusitis was twice as common, and colds and acute pharyngitis slightly more common, in the regular swimmers than in the non-swimmers, but there was no constant difference in the incidence of influenza, streptococcal throat infections, or otitis media. In one year in which the numbers of cases were sufficient to make comparison worth while the number of cases of measles was 33% greater, in proportion to the size of the group, among the regular swimmers than among the non-swimmers. Similarly in another year there were six times as many cases of mumps among the swimmers as among the non-swimmers. The

[1] *The Examination of Water and Water Supplies*, Thresh, Beale and Suckling (5th ed. by Suckling, E. V.), 1943, London.
[2] *New Engl. J. Med.*, 1948, **238**, 899.

inference is that after the occurrence of the first case of measles or mumps in the swimming group the risk of spread is greater than among the non-swimmers. A further observation was that over the whole period the non-swimmers had on the average 14% fewer days in hospital because of respiratory illness. Gallagher's conclusion is that with careful control and reasonable precautions the benefits of a swimming-pool outweigh any possible risk of spreading infection.

MEPACRINE DERMATITIS

In 1943 Peterkin and Hair[1] observed an eruption of the skin in soldiers serving in North Africa, and they saw a similar condition later in Italy; they believed this to be caused by mepacrine, and American dermatologists were of the same opinion. At about the same time a similar dermatosis was observed among soldiers taking mepacrine in the New Guinea–North Solomons area, and later in the Philippines, Australia, and India.[2-8] Pruritus was severe in most patients, but constitutional symptoms were usually absent. An acute onset, with generalized erythema, was followed by the development of chronic lesions. Nisbet[9] found a chronic symmetrical eczematoid eruption in 80% of the cases he saw, the commonest sites being the ears, eyelids, periorbital region, the backs of the hands and feet, and those areas most often affected in seborrhoeic dermatitis. In 12% of the cases pigmented flat or hypertrophic lichenoid lesions developed, with patchy alopecia. This type of eruption was more widespread than that of ordinary lichen planus. Lesions resembling lichen planus, leucoplakia, or syphilitic mucous patches appeared on the tongue and mucous membranes of the mouth. Dystrophy of the nails resembled psoriasis or fungous infection: a case in which this sign was prominent was reported recently in this *Journal* by Dr. G. H. V. Clarke (July 9, p. 58). Exfoliative dermatitis was sometimes a primary reaction, or it might follow the eczematoid or lichenoid eruptions; it was similar to that caused by the organic arsenicals and was occasionally fatal. A resemblance to Riehl's melanosis was noted by Sulzberger[10]—lichenoid, pigmentary, atrophic, telangiectatic, and poikiloderma-like changes being present in both. This observation is of interest, because Riehl's melanosis appeared in Vienna after the 1914–18 war[11] and acridine derivatives were among the suspected causes.[12] Other diseases which may resemble mepacrine dermatitis are lupus erythematosus, psoriasis, pityriasis rosea, and seborrhoeic eczema.

The incidence of mepacrine dermatitis among troops was difficult to assess. In the Pacific zone Williams[7] found 0.5 cases per 1,000 in a New Zealand division and Alden and Frank[8] 0.6 per 1,000 in American troops. Pillsbury and Livingood,[13] however, thought it probable that "at least 1% of all persons in hot, humid, tropical overseas areas who took quinacrine hydrochloride in suppressive dosage over a period of at least six months acquired some type of cutaneous reaction."

It is now agreed that the ingestion of 0.1 g. or more daily of mepacrine for several months was the cause of this condition. Inder Singh,[14] who has recently described the occurrence of mepacrine dermatitis in labourers in India, considers, like Nisbet, that the accumulation of mepacrine in the skin depends on the dose and the rates of absorption and of excretion. Thus lesions recur after a latent period of one or more weeks when mepacrine is again given to patients who have recovered. Similarly, larger doses of mepacrine may produce lesions in patients previously unaffected. Several authors have noted a seasonal incidence, and Singh agrees that mepacrine dermatitis is more common during the hotter and more humid months. This may be due to diminished urinary output of mepacrine and perhaps to a combination of profuse sweating and the deposition in the skin of an insoluble form of mepacrine. The treatment of the condition is to hasten elimination of the drug by a large fluid intake and the administration of acid salts.

COARCTATION OF THE AORTA

An unusual study of coarctation of the aorta has been made by Newman,[1] who has examined the histories of 20 patients who served in the recent war and three in the 1914–18 war. These patients, all men, were examined on enlistment, but coarctation was not diagnosed until later, generally after years of very strenuous activity. Most of them were of good or even powerful physique. It would be interesting to know how many men were rejected by medical boards for coarctation, since 20 cases among the huge population which the armed Services represented would make coarctation a much rarer defect than it is believed to be. How the correct diagnosis eventually came to be made, whether from symptoms or from signs found on routine examination, is not entirely clear, but it would appear that in a number of the men the discovery was made from the appearance of rib notching in a radiograph of the chest. This was present in 16 or 17 of the 23 cases. In one in which there was no notching the aortic knob was prominent and high—a finding which shows that the characteristic radiographic signs in the chest cannot be relied upon. Hypertension in the arms (usually greater in the right arm) was an almost constant sign, though in one subject the reading was only 144/90. An important observation was that cardiac enlargement, which was usual, bore no relation to the height of the blood pressure. When recorded, the arterial pressure was always less in the leg than in the arm, and in many of the cases the femoral pulse was absent. The other most frequent signs were a systolic murmur over the praecordium (sometimes also heard over the back) and a collateral circulation over the chest. Of the 20 men who served in the last war, three have died—one from rupture of the aorta, one while being operated upon for the coarctation, and one from subacute bacterial endocarditis. The three cases of the 1914–18 war were known to have survived an average of 24 years before death or the onset of very severe symptoms.

[1] *Brit. Heart J.*, 1948, **10**, 150

[1] *Brit. J. Derm. Syph.*, 1946, **58**, 263.
[2] Bagby, J. W., *Arch. Derm. Syph., Chicago*, 1945, **52**, 1.
[3] Nisbet, T. W., ibid., 1945, **52**, 221.
[4] Wilson, D. J., ibid., 1946, **54**, 377.
[5] Bazemore, J. M., Johnson, H. H., Swanson, E. R., and Hayman, J. M., ibid., 1946, **54**, 308.
[6] Butler, M. G., ibid., 1947, **55**, 535.
[7] Williams, W., *British Medical Journal*, 1947, **2**, 901.
[8] Alden, H. S., and Frank, L. J., *Arch. Derm. Syph., Chicago*, 1947, **56**, 13.
[9] *J. Amer. med. Ass.*, 1947, **134**, 446.
[10] *Arch. Derm. Syph., Chicago*, 1947, **56**, 23.
[11] *Wien klin. Wschr.*, 1917, **30**, 780.
[12] Nelson, L. M., *Arch. Derm. Syph., Chicago.*, 1947, **55**, 12.
[13] Ibid., 1947, **55**, 441.
[14] *Brit. J. Derm. Syph.*, 1948, **60**, 90.

INTERNATIONAL CONGRESS OF OTOLARYNGOLOGY

LONDON MEETING

The fourth International Congress of Otolaryngology was held at King's College, London, last week. The assembly was attended by 725 members and 72 scientific associates, all medical men practising the specialty, and some forty countries were represented. The Congress was opened on July 18 by H.R.H. THE DUCHESS OF KENT, who said that so large a gathering, representative of so many nations, was evidence of advancing knowledge and of the increasing importance attached by physicians and research workers to a subject which bore directly on the lives of all. Her Royal Highness was welcomed by Mr. V. E. NEGUS, the president of the Congress, and thanks were expressed to her by Mr. F. C. W. CAPPS, the general secretary.

In 1928 the first International Congress was held at Copenhagen, under the presidency of Professor Schmiegelow, who died during the past year. The second was held at Madrid in 1932 and the third in Berlin in 1936, under the presidencies of Professors Tapia and von Eicken respectively. The fourth would have been held in Amsterdam in 1940 had the war not intervened.

A full programme was arranged for the London Congress. About 150 papers were presented, most of which were discussed in four sessions sitting simultaneously. There were three general discussions, the first on antibiotics and chemotherapy in the treatment of nasal sinusitis and its complications, which was opened by Sir Alexander Fleming and Sir Lionel Whitby. The second was on the treatment of aural vertigo, and the third was concerned with non-malignant strictures of the thoracic oesophagus and their treatment. In addition there was an almost continuous programme of films, by which many of the American and Continental visitors demonstrated their operative techniques. Visits to hospitals and clinics were arranged, and receptions were given by H.M. Government, the London County Council, the Royal College of Surgeons, the Royal Society of Medicine, and the British Medical Association. After their strenuous week in London the visitors separated for meetings in Oxford, Cambridge, and Edinburgh.

Treatment of Aural Vertigo

About twenty speakers took part in a discussion on aural vertigo, which was opened by Professor F. R. NAGER (Zurich). He said that the pathogenesis of the condition was still largely unknown, and several diseases probably contributed to it. The theory of allergy had been rejected in many quarters. Professor C. NYLEN (Uppsala) gave a survey of 180 cases seen between 1944 and 1948, the majority of which were treated conservatively during the critical period by confinement to bed, a special diet (which included extra vitamins), and restriction of fluids. About 70% of the cases treated in this way recovered or improved considerably. Operative treatment had been undertaken in only a few cases; in five the vestibular nerve had been cut.

Dr. W. J. MCNALLY (Montreal) reviewed a series of 200 cases seen over ten years. It was not easy, he said, to make a diagnosis of aural vertigo, and the triad of dizziness, deafness, and tinnitus was present in only about half the cases. It was significant that in about 50 of these patients there was definite evidence of advanced cardiovascular disease. He felt that cardiovascular disease and disease of the central nervous system might play an important part in the aetiology of this condition. A history of allergy was given in about 50 of the cases. In aural vertigo there were long remissions, and in this series the longest, up to four years, had been found in patients who had received no treatment at all. Treatment had been confined to sedation in some cases, but at best this produced only a temporary result. About half the patients were placed on a modified salt-free diet and given potassium chloride. About 30 had histamine, in most cases administered subcutaneously, and in about half of these relief from dizziness was obtained. Histamine brought about an improvement in hearing also. Nicotinic acid had proved useful, and about three-quarters of the patients so treated showed signs of improvement. Nine cases were treated surgically (by eighth nerve section), of which five were cured. He felt that surgery should be rigidly restricted to carefully selected cases.

Dr. J. A. SULLIVAN (Toronto) also urged severe restriction of surgical intervention. The fenestration operation had in his experience made the condition worse, and he had been obliged to subject the patient to further intervention later. Dr. E. P. FOWLER (New York), who suggested that the term "otic vertigo" was more appropriate and less confusing than "aural vertigo," gave an account of eight patients with either bilateral or very severe symptoms who had refused operation and were treated with streptomycin. One of the cases had a further severe attack one year after treatment, but the others had so far done well. The effect of small doses of streptomycin on the vestibular cells was good and free from deleterious effects. Dr. C. A. HAMBERGER (Stockholm) gave an account of the chemical changes in the vestibular ganglion in guinea-pigs after administration of streptomycin. The effect of the streptomycin appeared to be selectively linked to the eighth nerve.

Other speakers in this discussion were Professor Y. MEURMAN (Helsinki), Professor G. PORTMANN (Bordeaux), Mr. T. E. CAWTHORNE (London), Dr. C. A. AMESUR (Bombay), Mr. GARNETT PASSE (London), Dr. J. M. TATO (Buenos Aires), Dr. H. M. GOODYEAR (Cincinnati), and Dr. D. E. WODEK (Tel Aviv). Dr. Wodek described the treatment of aural vertigo by a new drug called scopanin, which was manufactured from the root of the mandragora. He said that it had proved useful and without side-effects, and was effective also in air- and sea-sickness.

Changes in Aural Surgery

The fenestration operation was the sole topic of discussion at one session, at which Dr. J. A. SULLIVAN (Toronto) gave the results of ten years' experience, and Professor M. SOURDILLE (Strasbourg) demonstrated his surgical technique.

Mr. T. E. CAWTHORNE (London) said that the last few years had witnessed a great change in the type of surgery performed by otologists. The surgery of suppuration was diminishing rapidly, while non-suppurative surgery was expanding at an almost equally rapid rate. It was therefore important to consider the new techniques that non-suppurative surgery demanded. Changes in aural surgery had been accompanied by extensive alterations in technique and management. Until the present century it was considered that any approach to the bony boundaries of the labyrinth rendered it extremely vulnerable to infection, and as a result operations were generally, and not without justification, viewed with disfavour. The greatest advance in aural surgery had been the demonstration that non-suppurative conditions of the temporal bone could be operated on without subsequent infection, provided the general rules of aseptic surgery were observed.

Non-suppurative surgery of the temporal bone demanded for its proper performance a brilliantly lighted field, for the parts to be operated on were small and delicate. In the past many surgeons had been handicapped by inadequate illumination for their task. Another important development was magnification, some degree of which was necessary in such surgery. With a bright beam of light reflected by a mirror, and the use of a microscope, many things were shown which might otherwise escape detection. But the full benefits of illumination and magnification could not be obtained if the field was obscured by blood. Any anaesthetic which caused congestion was to be avoided. Local bleeding must be controlled by diathermy. For many of his finer instruments the otologist was indebted to his ophthalmic and dental colleagues. In the fenestration operation, for instance, fine dental instruments were needed to clean the edge of the fenestra. The margin of error in many of these operations was small, and no one should undertake them without adequate training on the cadaver. The sphere of the otologist had been enlarged. He was now able to restore equilibrium to the unbalanced and even give hearing to the deaf.

Antibiotics in Nasal Sinusitis

A discussion on antibiotics and chemotherapy in the treatment of nasal sinusitis and its complications was introduced by Sir ALEXANDER FLEMING, who referred to the role of penicillin and other antibiotics in this connexion. Twenty speakers from more than a dozen countries participated in the discussion. Sir LIONEL WHITBY said it might be asked whether the sulphonamides had any place in the treatment of nasal sinusitis now that antibiotics had come into use. He would answer yes for two reasons: one, the availability of these products, and the other, the fact that the sulphonamides had a significant action on Gram-negative bacteria. But if sulphonamides were to be used in nasal sinusitis it was important to bear certain principles in mind, because the use of these drugs was not without risk, whereas with penicillin there was no risk at all. The most useful action of the sulphonamides was probably prophylactic; this was particularly true in tonsillar and nasal infections. They had a useful place in the early stages of acute infections, but in chronic infections they were disappointing unless free drainage was established. On occasion they might be successful where penicillin failed.

Sir ALEXANDER FLEMING said that he was told by his ear, nose, and throat colleagues that penicillin had made a considerable difference in the treatment of nasal sinusitis and its complications. This was only to be expected from the fact that nearly all infections of this class were due to organisms which were sensitive to penicillin. In such cases the treatment resolved itself into the introduction of penicillin so as to ensure that it reached the infecting organisms and remained in contact for a sufficient time to destroy them. Perhaps the most important advances in penicillin therapy had been those designed to prolong the action of penicillin injections, especially by delaying excretion. Systemic administration of penicillin was easy; it was very different with local administration. Here the surgeon had to bring the drug into contact with all the infecting organisms, and this might be difficult or impossible. Sir Alexander concluded by remarking that under present circumstances patients would often be treated with these selective drugs without bacteriological control. When the surgeon was treating sinusitis he was not merely combating a word ending in "-itis": he was in conflict with a definite infection, and he was at a serious disadvantage if he knew nothing of the organism involved.

Dr. H. P. SCHENCK (Philadelphia) said that the value of the antibiotics and sulphonamides had inevitably been depreciated by errors in the hands of the inexperienced. Although the mistakes of insufficient dosage, administration at an improper rate and for an inadequate interval, or use against non-susceptible organisms had come to be generally recognized, other pitfalls remained. He condemned in particular the use of aerosols in the treatment of most forms of sinusitis. It was inconceivable that such mists could penetrate diseased sinuses which were closed by an oedematous mucosa or by tenacious secretions. Such aerosols undoubtedly had value in the nasal passages themselves, but they were unable to enter the sinus cavities in sufficient concentrations to be therapeutically effective. The fallacy of attempting to influence the fluid level in the maxillary sinus by the use of antibiotic aerosols alone was obvious. Removal of obstructions to drainage and ventilation, shrinkage of turbinal tissue, and sometimes displacement irrigation continued to be necessary in addition to chemotherapy if a successful result was to be achieved.

Non-malignant Strictures of Oesophagus

Another general discussion was on non-malignant strictures of the thoracic oesophagus and their treatment. Before calling upon Dr. Gabriel Tucker, of Philadelphia, to open the discussion, Mr. V. E. NEGUS, president of the Congress, said that in the treatment of some of these oesophageal conditions in this country great benefit had been obtained from Dr. Tucker's dilating bag—a bag with three layers which collapsed to a small size and could be used with the oesophagoscope. He had found it extremely useful. For its introduction, in certain cases, it was an advantage if the centre was perforated so that it could be introduced along a guide. It was sometimes wrongly described in this country as the Negus bag. He always took occasion to correct that description and to assign the credit where it belonged—to Dr. Tucker.

Dr. GABRIEL TUCKER recounted his observations on a series of cases, seen in a period of 25 years, with special reference to diagnosis and treatment. These included 36 cases of short oesophagus, 63 of stricture caused by caustic burns—alkalis, acids, and other corrosives—and a smaller number due to other trauma or of congenital origin. He showed a film to illustrate his procedure of continuous string retrograde dilatation in the patient with a gastrostomy.

Dr. CHEVALIER L. JACKSON (Philadelphia) said that the prevention of caustic burns of the oesophagus had been the subject of campaigns in the United States. Many years ago Chevalier Jackson, senior, had been active in promoting committees which caused various States to introduce legislation on the labelling and sale of substances which produced such burns. Now a Federal Act had been passed to the same effect, and the incidence of these accidents had been greatly reduced. In simple stenosis due to burns, dilatation with oesophageal bougies was generally sufficient. In multiple strictures, however, and even in single strictures in children the retrograde dilatation method of Tucker was considered to be safer and more efficient. If the stricture was of longer than a year's duration it might not be possible to re-establish the passage by endoscopic methods, but he believed that in cases with less than a year's history the passage could be re-established under fluoroscope guidance, even though the patient was not able to swallow well.

Dr. P. H. HOLINGER (Chicago) said that in the dilatation treatment of stricture caused by caustics his practice was to use mercury-filled bougies. Indwelling tubes had been abandoned because of the tendency to post-cricoid ulceration. A new problem was presented by post-surgical stricture following section of the oesophagus for carcinoma or for benign lesions, which sometimes substituted a benign nodular type of stenosis for a smooth cicatricial type. Another group comprised children with tracheal stricture associated with atresia or stenosis of the oesophagus. Professor ODD OPHEIM gave an analysis of the treatment of burns of the oesophagus in two hospitals in Oslo during a five-year period. In all, 132 patients had been observed, of whom 81 were children under 3. Four patients presented negligible corrosive marks in the oesophagus, or none at all, and these received no treatment. The other cases were fairly equally divided between those showing distinct but not deep-seated corrosion and those with major corrosive injuries. In these latter cases an indwelling tube was introduced and left in for at least eight weeks. It was removed only for the necessary changes. Of 39 patients followed up in the first of these groups, 31 were found to be symptom-free, seven had marked, though not severe, swallowing difficulties, and one had died. In the group of major corrosive injuries, 28 out of the 39 whom it was possible to follow up were symptom-free, seven had swallowing difficulties, and three had died. Treatment had been singularly free from complications.

Dr. L. H. CLERF (Philadelphia) said that in most of his cases retrograde bouginage had been carried out. In cases in which gastrostomy had been done he had used the indwelling tube, placing it in position under fluoroscopic guidance and securing it with a thread above and a thread through the gastrostomy opening. Care must be taken that the thread was not behind the cricoid. Dr. F. T. LAND showed a series of cases from the Western Infirmary, Glasgow, of lesions of the lower third of the oesophagus. The presenting symptom was pain in three cases, dysphagia in ten, and pain and dysphagia together in 16. The lesions were twice as common in females as in males, and five of the cases of dysphagia occurred in pregnancy, all among older women (aged 36 to 42).

Other speakers from France, Finland, Austria, Holland, and Italy took part in this discussion.

Differential Diagnosis of Aural Vertigo

Mr. C. S. HALLPIKE (London) gave a paper on the pathology of aural vertigo. He mentioned three varieties of aural vertigo: (1) Ménière's disease, or idiopathic endolymphatic hydrops; (2) vestibular neuromatosis; and (3) positional vertigo. Ménière's disease affected chiefly patients aged 40–60. The

first attack of vertigo was unaccompanied by any history of head injury. Distortion of hearing was a common complaint, and tests of cochlear function showed considerable deafness. In the active phases of the disease loss of intelligibility in hearing was out of all proportion to pure tone audiometric loss. He emphasized the importance of changes in Corti's organ. Vestibular neuromatosis affected younger patients than did Ménière's disease, and was not uncommon between the ages of 20 and 30. The onset of symptoms was frequently connected with some infective illness. Unlike Ménière's disease, the symptoms might include transient "black-outs," and the condition persisted between the attacks as a feeling of lack of balance. A fair proportion of these patients were found to have oro-nasal infection. In positional vertigo the onset of symptoms might again date from an infective illness or head injury. Many cases showed evidence of focal infection in the territory of the ear, nose, and throat. Localized tenderness in the occipital region was noticed.

Dr. MILES ANDERSON (New York) discussed the evidence for vitamin deficiency as the basic disturbance in Ménière's syndrome. He had found that patients with this syndrome who were histamine-negative had severe deficiencies in nicotinic acid, while in the histamine-positive group the majority were severely deficient in riboflavin. Patients responded to treatment by means of vitamins, first with the fraction that was deficient and afterwards with the other fractions. The vasoconstrictor group responded to nicotinic acid and the vasodilator group to riboflavin.

Colds and Catarrh

Neurogenic factors in the common cold was the subject of a paper by Dr. E. P. FOWLER (New York). In the common cold of all types an emotional factor was very likely to be the precipitating one. It arose from a state of imbalance. He mentioned the well-known "courtship cold," the "honeymoon cold," and the catarrh of pregnancy. It was very common for a cold to develop on examination day or on a day of domestic upheaval, evidently due to changes in the nasal mucosa arising from an emotional cause. It was generally accepted that the common cold was due primarily to a virus infection, but the preparation of the "soil" must not be overlooked. If workers in certain dusty occupations and those in contact with infections were excluded, he believed that a large number of colds were of a neurogenic type, due to overaction of the sympathetic. Physostigmine or a similar drug was indicated instead of the usual sulphadiazine or penicillin. The outstanding prophylactic was emotional equilibrium.

Adenoids in the adult as the cause of chronic nasopharyngeal infection were mentioned by Dr. B. M. KULLY (Los Angeles). He considered that hypertrophy of the adenoids commonly persisted into adult life and was responsible for many catarrhs, low-grade fevers, and unexplained headaches. In 140 necropsies eight specimens were found of hyperplastic adenoids of infantile type in persons over 70 years of age. He was left with a feeling that adenoids were a primary factor in the causation of the common cold, and that the removal of adenoid tissue in the adult was one of the best means of diminishing the incidence of colds and their complications. He mentioned a number of persons whose hearing had greatly improved after the nasopharynx was cleared by fulguration with high frequency, followed by irradiation.

Mr. O. POPPER (Johannesburg) brought forward the subject of the restoration of hearing in the "chronic ear." He said that there had been a spate of literature on this subject. If the character of infective deafness were analysed the elements which made up the pattern of the "chronic ear" would be found to include the obliteration of the round window by granulations or other proliferations, and the removal of the stapes from the oval window, causing disequilibrium. The first objective must be an unrestricted sound path. The "chronic ear" person, who did not even remember when he heard last, was sometimes inclined to write off his hearing. That the hearing could be restored by operative measures did not seem to have occurred to him or to his doctor, but the elimination of obstructive elements might restore it without any other operative procedure. Mr. Popper urged that the operation for the restoration of hearing was not an anatomical dissection and should not be too radical.

Dr. TAGE KJAER (Copenhagen) discussed bronchostenosis of inflammatory origin. He said that this was no uncommon condition. It could be divided into (1) acute and subacute catarrh with submucous swelling, and (2) a stenosis in which changes extended through the whole bronchial wall, with a tumour-like appearance in some cases. He analysed a series of 30 cases seen in Copenhagen, and gave particulars of their treatment.

Treatment of Acute Mastoiditis

Mr. J. I. MUNRO BLACK (Newcastle-upon-Tyne) gave an account of the treatment of acute mastoiditis in children by penicillin. Injections were continued until the swelling of the tympanic membrane had completely disappeared. The time necessary for this to take place was from four to fourteen days. In the majority of cases acute mastoiditis could be treated by penicillin injections alone, with perhaps incision of an abscess. Parents could be reassured that no immediate operation was required and that it was unlikely that surgery would be necessary at all. He thought that cases with otorrhoea did best with this form of treatment, and that this method should be brought to the knowledge of general practitioners. They should use penicillin early in the treatment of acute suppurative otitis media, with the object of preventing the formation of an abscess. This advice had been more welcome since procaine penicillin had become available, making possible one injection a day instead of four.

The operation of transmeatal attico-antrotomy was described by Mr. A. TUMARKIN (Liverpool). He said he had brought the operation to the attention of the Section of Otology of the Royal Society of Medicine two years ago. It had been criticized on the ground that it gave a restricted approach, but he found it had proved completely adequate in the majority of cases and he had never had to abandon an operation because the access was not sufficient. It was a logical procedure. It did not sacrifice the ossicular chain or disturb the normal tissues. The haemorrhage could be controlled. It was not an easy operation, but in hands possessed of reasonable skill it presented no special difficulty. He had now done 500 cases with no deaths and no major catastrophes. There were no instances of facial palsy. After-treatment must be carried out with care. He did not recommend the transmeatal approach in acute infections, nor when complications were present, but he had found it adequate for all "cold" surgery and he now used it for fenestration. The method permitted the surgeon to alter the operation in accordance with the pathological conditions he encountered. In days gone by operations were done to save life; to-day they should be done to save hearing also. Professor G. CORNELLI (Milan) read a paper on the transmeatal approach to the tympanic cavity.

Dr. A. J. CRACOVANER (New York) introduced the subject of bronchoscopy in the treatment of diseases of the lung. At one time this method was employed only for the removal of foreign bodies, but it was now used in many lung conditions. In lung abscess bronchoscopy should always be performed to determine the cause and exact location of the suppuration and to plan the necessary treatment. Bronchoscopic aspiration had been known to assist in the healing of an acute abscess. It was well to bronchoscope every case of bronchiectasis and every patient who had a thick exudate in the bronchus for any unreasonable time. In tuberculosis it was thought not so long ago that bronchoscopy was contraindicated, but this idea no longer held good. Certain definite indications called for bronchoscopy—for example, a patient with positive sputum but no other signs of tuberculosis. In cases of asthma which were not relieved by the accepted methods of treatment it should be borne in mind that the condition might be the result of bronchial obstruction. Dr. Cracovaner added that surgeons and anaesthetists were now using bronchoscopy, but it was only the specialist in this technique who could advance it and discover its possibilities.

Techniques of Examination

A demonstration of a simplified technique for direct laryngoscopy was given by Dr. SAM ROBERTS (Kansas City). He employed a special head block which ensured the head being

in the optimum position. The curve of the block held the head firmly and did away with the services of a trained assistant. Interest was also shown in a demonstration by Professor A. TRIMARCHI (Bergamo) of an apparatus which permitted the inspection of the larynx life-size or enlarged. Dr. P. H. HOLINGER (Chicago) showed his skill in endoscopic photography. His technique resulted in admirable pictures of the larynx and bronchus one-quarter of an inch (0.6 cm.) in diameter and capable of considerable enlargement.

A series of films by Dr. L. H. CLERF (Philadelphia), which included photographs of the normal larynx during respiration, phonation, and cough, attracted considerable attention. He also showed photographs illustrating unilateral and bilateral laryngeal paralysis following thyroidectomy, the technique of the modified King operation for mobilization and lateral fixation of the vocal cords, and the appearance of the larynx before and after operation. Another film, by the Edison Bell Telephone Company, showed the vocal cords in "slow motion," recorded on film at a speed of 4,000 frames per second. Perhaps the most remarkable of the films was by Dr. H. G. Kobrak (Chicago), who, by using optical magnification combined with stroboscopic illumination, had recorded the vibrations of the ear in response to sound stimulation. The film showed drum vibrations, movements of the ossicular chain, and vibrations of the round window membrane. The movements in disease were also shown, correlated with distorted acoustic signals recorded simultaneously on a sound track.

The presentation of 150 papers with only 15 minutes allowed for each gave a sense of haste to the proceedings, although discussion had generally to be entreated rather than curtailed in the intervals set aside for the purpose. Only a few of the speakers can be mentioned in a summarized account. Several papers on the surgical treatment of cancer of the larynx and the oesophagus were presented, also a number on the conservation of hearing and hearing-aids and on vocal cord paralysis.

Mention should be made of the exhibition illustrating the history of otolaryngology, which was arranged by Dr. Douglas Guthrie and Lieutenant-Colonel W. A. D. Drummond. It included a number of instruments designed by Morell Mackenzie, the manuscript of his work on malformations of the oesophagus, and his book *Frederick the Noble*, the story of the illness of the Emperor. The exhibits were from the collection of Dr. Irwin Moore and the Wellcome Historical Medical Museum. Other collections were of books, letters, and instruments associated with Sir StClair Thomson and with Lord Lister.

The delegates from overseas, who numbered some 450, expressed their appreciation of the arrangements for the Congress and of the kindness of their British hosts. During the course of the Congress the King, as Patron, sent a message expressing his good wishes for its success.

THE OFFICIAL BANQUET

The banquet in connexion with the Fourth International Congress of Otolaryngology was held at the Dorchester Hotel last week with the president, Mr. V. E. Negus, in the chair. There was a very large attendance of members of the Congress and their wives and guests. After the loyal toasts had been honoured, Sir Henry Dale, O.M., proposed the health of the Congress in a speech the keynote of which was international co-operation in medicine and science. There were, Sir Henry Dale said, forty different nationalities represented at the Congress. The King was the Patron of the Congress and the Duchess of Kent had opened it. "All London is eager to welcome you." Sir Henry pleaded that international science should be kept free from national prejudices. Science was one of man's intellectual activities which were universal. Sir Humphry Davy, he said, was during the Napoleonic wars received with courtesy by the Academy of Sciences in Paris, and it was in Paris in 1907 that Charles Richet made an impassioned appeal at the Congress of Physiology for abolishing barriers in the world of science. Sir Henry, recalling that Sir John Pringle had started the idea of the Red Cross, suggested that the symbol of the Red Cross should be kept flying over medical activities of all kinds.

In response Mr. Negus referred to the friendships which were established at congresses of this kind outside the halls in which scientific discussions were held. He paid tribute to Sir Henry Dale as one who personified the acme of science allied to medicine. Mr. Negus referred in particular to distinguished oto-rhino-laryngologists who had graced congresses in previous years—Professor Schmiegelow, of Copenhagen, Sir StClair Thomson, and Professor de Kleyn, of Amsterdam. Lord Webb-Johnson, to whom Sir Henry Dale had paid tribute for his work for the Royal College of Surgeons and in wider fields, proposed the toast "Oto-rhino-laryngology." He, too, referred to the need for international friendship and co-operation in science and medicine. The names of great surgeons had been associated with otology and of physicians with laryngology. He referred to the support given to the specialty by the Royal College of Surgeons. In response Dr. LeRoy A. Schall, of Boston, praised the action of the president of the Royal College of Surgeons in raising the prestige of the specialty of oto-rhino-laryngology. In proposing the health of the guests Mr. F. C. W. Capps, the general secretary of the Congress, said that between four hundred and five hundred members had come from overseas at great cost and trouble to themselves. This made the people in this country proud to hold the Congress in London. On behalf of the guests there were responses from Professor le Maitre, of France, and Dr. N. Rh. Blegvad, of Denmark, who entertained the diners by putting a viking's helmet on his head and a beard round his chin to illustrate what previous invaders of England had looked like.

UNICEF IN YUGOSLAVIA

The programme of work carried out in Yugoslavia by Unicef (United Nations International Children's Emergency Fund) was explained at a press conference at United Nations office in London. The cost of the programme so far has been ten million dollars, of which 60% has been spent on food. As many as 600,000 children, as well as expectant and nursing mothers, have been cared for. One of Unicef's principles has been to encourage communal meals at schools, partly because this is the most economical way of handling the food, and also because it is hoped that once a system of school feeding is established it will be made permanent. Unicef in Yugoslavia, as in other countries, is operating a programme of B.C.G. vaccination against tuberculosis. When this is completed it is thought that one and a half million children will have been vaccinated. An area of central Bosnia has suffered from an outbreak of syphilis not transmitted sexually. In some mountain villages the incidence among children was said by one American venereologist to be as high as 50%, and the children have passed the disease on to their parents. Procaine penicillin was being used in combating this outbreak.

D.D.T. was being used against malaria and fly-borne diseases. The previous work of Unrra in Yugoslavia and other countries had done a great deal to bring down the incidence of malaria, and it was said that for the first time since the second Punic war (218 B.C.) Italy had no deaths from this disease last year. This is attributed to D.D.T.

The organization also provided milk-processing machinery for the manufacture of powdered milk and for pasteurization. There was a shortage of milk, which was greatest in the mountains on the Dalmatian coast, but it was hoped to supply at least a minimum of clean, dried milk for use in every part of the country and at all times of the year.

Mr. Forrester, the agent of Unicef, who presided at the conference, said that in Europe four and a half million children were being given milk regularly every day by the organization. The continued need for the use of powdered milk since the end of the war had placed a strain on the manufacturing capacity. Opposition to communal feeding had been experienced from parents, who felt that what was provided in the home was good enough, but that opposition was breaking down. Another effect of Unicef work was upon labour productivity, for venereal

diseases in their endemic form were debilitating rather than lethal. The same remarks applied to malaria. If those two diseases could be wiped out a great deal would have been done to assist productivity in the areas affected. Another aspect of the work, said Mr. Forrester, had been to demonstrate the practicability of international co-operation. When the children themselves saw packages labelled in almost every part of the world they saw a demonstration of international unity. They felt that they were being looked after, and that there was something more in United Nations than political disagreement.

BRITISH EMPIRE CANCER CAMPAIGN

Transatlantic Exchange Fellowships

The DUKE OF GLOUCESTER presided at the annual meeting of the British Empire Cancer Campaign, which was held at the House of Lords on July 12. He stated that, thanks to the special appeal for increased funds to mark the 25th anniversary of the Campaign, sufficient money had been subscribed to enable a number of fellowships to be created. These would allow first-class men to concentrate on different aspects of the cancer problem for periods of several years without interruption by other duties. £87,000 had been set aside for this purpose. At the same time the Campaign had inaugurated a system of exchange fellowships with Canada and the United States. Research students from those countries would come over here for a year, while British students would visit suitable institutions in America. It was hoped that within a few years all the Dominions and Colonies would be able to participate in this scheme.

His Royal Highness mentioned that import licences for laboratory equipment from the United States to the value of about £25,000 had been granted to the Campaign, and orders were also being placed for equipment which could be manufactured in this country. These expenditures were in addition to the normal annual allocation of grants to institutions and individuals, and the Campaign's financial support for cancer research for the year approached a quarter of a million. He congratulated Sir Heneage Ogilvie, the new editor, on the production of the annual report. Sir Heneage succeeds Mr. Lockhart-Mummery, to whose 25 years' editorship fitting tribute was paid.

Lord WEBB-JOHNSON, moving the adoption of the report and balance sheet, said that a body of experts set the seal of its approval on the grants which were made, so that a generous public could always be assured that their contributions were spent to the best advantage. Lord WARDINGTON said that the large undertakings of the State in the health services might give rise to the impression that the need for sustained voluntary effort no longer existed. The Campaign was not subsidized by the Government, although its valuable work was recognized by the Ministry of Health. He added that during the 25 years of the Campaign's history no application for a grant had been refused because of lack of funds.

On the proposition of Professor R. D. PASSEY, seconded by Professor F. DICKENS, the members of the Grand Council were re-elected. The Nuffield trophy for outstanding work in support of the Campaign's funds was presented to a representative of Sudbury and district.

Quiet and Steady Progress

The 26th annual report of the Campaign, which was presented to the meeting, embodies reports from about 30 research centres, including those in the Dominions, as well as a dozen reports from individual investigators. In his foreword, Sir Heneage Ogilvie gives further information about the American contacts to which the Duke of Gloucester had alluded. With the object of obtaining laboratory equipment for cancer research which was not available in this country, a delegation led by Lord Horder visited the United States and Canada. They not only saw the latest equipment but took the opportunity of recommending the institution of exchange Fellowships. It is hoped that the first two Canadian Fellows will start work in England in the coming autumn.

Last year saw no dramatic discovery in the field of cancer research, but the report is a record of much quiet and steady progress. The Campaign's scheme of intensive research into the virus theory of cancer is beginning to produce results. One useful effort in the study of carcinogenesis has been the preparation of a comprehensive bibliography of the literature relating to carcinogenic compounds and the tumours they produce. A comprehensive index of over 3,000 papers from 340 journals in several languages has been made. As Sir Ernest Kennaway remarks in a note on this subject, "Every science is in danger of being buried alive under its own literature." A guide to the rapidly advancing literature in all aspects of cancer would be of great service.

Reference is made in the report to studies of the isotopes. Radioactive isotopes for use as tracers in experimental and clinical research have been made available by the Medical Research Council for more than a year. These isotopes are also being used therapeutically in a number of centres, but as they have been available only since the latter part of last year little fresh has been learnt about them. In experimental radiology considerable progress has been made in the investigation of the absorption by tissues of microwave radiation in the 1–3 cm. range of wavelength. A report on this subject comes from King's College, University of Durham, and Royal Victoria Hospital, Newcastle. At this range the power of the beam is usually reduced to one-tenth after penetration through about 1.6 mm. of tissue. At shorter wavelengths the absorption might be less, but radiation cannot as yet be generated at high power in wavelengths shorter than 1 cm.

The cancer research department at St. Bartholomew's Hospital reports on the survival for five years and over of 400 cases treated by million-volt *x* rays, compared with similar cases treated by 200-kilovolt *x* rays. There is no marked difference in the response of the carcinoma to ordinary *x*-ray and to million-volt therapy, with the possible exception of carcinomas of the rectum and bladder and of the antrum and larynx. Evidence of any biological difference in response to the shorter wavelengths is lacking, and any improvement in the results is thought to be due to the physical advantages of greater penetration and greater accuracy in application.

Evaluation of Results of Treatment

Statistical analyses from various centres are given in the report. The Clinical Cancer Research Committee of the Campaign this year turns its attention to about 400 cases of cancer of the ovary and 126 of cancer of the vulva recorded at London hospitals. Little more than half the patients with primary cancer of the ovary consulted a doctor within the first three months of the appearance of symptoms, and in a certain number the symptoms were of more than six months' standing when the patients were first seen. Nearly half the patients already had clinically recognizable metastases when admitted to hospital. In cases of primary cancer of the vulva rather more than one-third of the patients consulted a doctor during the first three months, and in a similar proportion the symptoms were of over six months' standing when the patients were first seen. In 30% of 103 cases of primary cancer of the vulva there was a definite history of antecedent leukoplakia.

From the Marie Curie Hospital it is reported that the results now obtained by treating cancer of the body of the uterus by radium compare favourably with those produced by surgery. For cancer of the vulva, on the other hand, radical surgical removal, whenever possible, still appears to be the treatment of choice. It is considered that only inoperable cases or cases regarded as poor surgical risks should be treated primarily by radiotherapy. A report from the department of medical statistics at Birmingham University analyses the cases of carcinoma of the uterus seen at Birmingham United Hospital over the period 1936–47 (1,355 cases). On the five-year survival rates, surgery with deep *x* ray appears to give the best results in cancer of the body, 82% being still alive. Surgery alone gives a survival rate of 63%, radium alone 21%. The most common form of treatment for cancer of the cervix was radium alone, which gave a five-year survival rate of 18%.

A report from Cambridge illustrates the harmlessness of biopsy. In a series of 166 cases treated by radiation for

carcinoma of the uterine cervix, the five-year survival figures (25% of all cases treated) are the same for patients who had serial biopsies as for those who did not. From St. Mark's Hospital it is reported that biopsy has proved a reliable aid to diagnosis in rectal cancer. The procedure should be more generally employed, especially in cases where the clinical diagnosis is uncertain.

This document, although it is a collection of reports which often overlap, contains many interesting facts and figures. For example, there is the observation from St. Bartholomew's Hospital that the incidence of uterine cancer among Jewish women is lower than among non-Jewish. This is more remarkable because Jewish women seem to be particularly subject to conditions (early marriage and child-bearing and, in some communities, low economic status) which in other people appear to increase the liability to this form of cancer. The report not only records work which has been done but poses many new problems. This in itself is a stimulus to further investigation.

ORDER OF ST. JOHN OF JERUSALEM

The *London Gazette* has announced the following promotions in, and appointments to, the Venerable Order of the Hospital of St. John of Jerusalem:

As Commanders (Brothers): Air Marshal P. C. Livingston, C.B., C.B.E., A.F.C., F.R.C.S., Sir Reginald Watson Watson-Jones, F.R.C.S., Air Vice-Marshal F. J. Murphy, C.B.E., M.B., D.P.H., K.H.S., Surgeon Rear-Admiral J. A. Maxwell, C.V.O., C.B.E., M.B., F.R.C.S. *As Officers (Brothers):* Lieutenant-Colonel K. G. W. Saunders, O.B.E., F.R.C.S., Major J. R. Hamerton, R.A.M.C., T.A., Surgeon Rear-Admirals O. D. Brownfield, C.B., O.B.E., M.B., K.H.P., and K. A. I. MacKenzie, Surgeon Captain D. Duncan, O.B.E., M.D., D.P.H., R.N., Wing Commander R. L. Soper, M.R.C.S., L.R.C.P., Drs. A. P. Gorham, R. A. P. Gray, W. J. Vickers, J. McCausland, A. Critien, O.B.E., F. J. H. Crawford, W. G. Evans, A. G. Smith, and W. E. Hutchinson, Mr. J. A. E. M. Hadley, M.B., F.R.C.S. *As Associate Officers (Brothers):* Lieutenant-Colonels A. S. Garewal, M.B., and B. S. Nat, M.D., F.R.C.S., Drs. K. V. Adalja, M.B.E., and Shin Lok Shang. *As Officers (Sisters):* Dr. Mary A. C. Ainscow and Lady Elizabeth M. Wakeley, M.B. *As Serving Brothers:* Surgeon Commanders J. L. S. Coulter, D.S.C., M.R.C.S., L.R.C.P., and W. V. Beach, F.R.C.S., R.N., Drs. A. McK. Fleming, *M.C.*, J. J. Giraldi, O.B.E., F. H. P. Wills, J. D. McVean, G. N. Stathers, D. A. Brigg, F. C. Miller, G. I. Griffiths, J. G. Macqueen, W. G. Smith, E. J. Williams, and P. W. Rice. *As Associate Serving Brothers:* Drs. M. I. Chaudhri and M. D. Gautama. *As Serving Sister:* Dr. Eleanor D. Blunt.

Nova et Vetera

THE MIRACLES OF GEORGE FOX

George Fox's "Book of Miracles." Edited with an introduction and notes by Henry J. Cadbury. With foreword by Rufus M. Jones. (Pp. 162; illustrated. 21s.) Cambridge: The University Press. 1948.

This book is a reconstruction from the *Catalogue of all Papers and Books written by George Fox* of the 150 miracles performed by him and recorded in his *Book of Miracles*—a book which was never published and has since been lost. The *Catalogue* cites only the first and last few words of the account of each miracle, but Mr. Cadbury by patient and extensive research has identified many of the sufferers who were thus treated and the nature of their cures. The book was not issued with Fox's *Journals* because of the accusations harmful to Quakerism which might have been caused by it. In 1656 a critic wrote of the Quakers: "They pretend to learn modesty from the example of Christ, who forbad the reporting of many of his miracles to the world; but they make no little use of them among their seduced ones to confirm them thereby in their delusions, and it is not unlikely would make them more publick to the world were it not that they feared to be found liars if they should do so." George Fox's miracles do not appear to be more surprising than the medical cures recounted by contemporary orthodox physicians; sometimes they arose from the provision of spiritual consolation, now and again by the use of physical remedies. Disciples of Dick Read will find in this book an early account of painless childbirth. On Sept. 9, 1657, Thomas Salthouse wrote, "This day I came about 30 miles to Walter Clements' house who is at liberty and well. And this very hour, being about the seventh hour at night, is Walter Clements' wife delivered of a daughter by the mighty power of the Lord. Before she travailed she brought forth to the astonishment of the heathen that cannot believe and to the praise and honour of Him that hath taken away the curse. . . ."

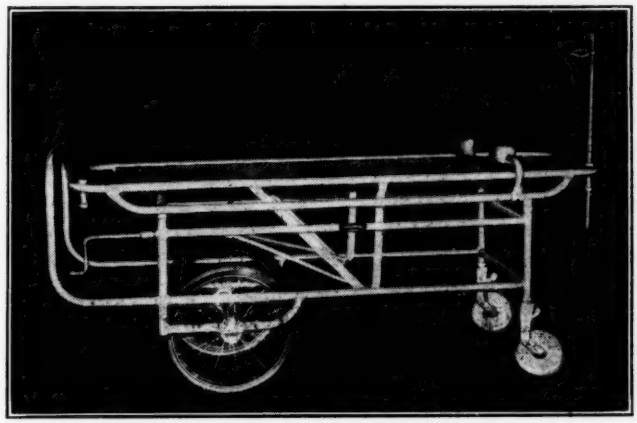
"A miracle," said a character in Bernard Shaw's *St. Joan*, "is an event which creates faith." This definition reversed supplies the modern explanation of the miracle, itself created by faith. The miracles of George Fox are the minor seventeenth-century decorations of a remarkable personality whose spiritual odyssey is set out in his *Journal*. The book under review is of no more than antiquarian interest, but the *Journal* is one of the great English autobiographies.

D. V. HUBBLE.

Preparations and Appliances

TILTING TROLLEY FOR CONVEYING PATIENTS TO AND FROM OPERATING THEATRE

Mr. MICHAEL C. OLDFIELD, F.R.C.S., honorary assistant surgeon, Leeds General Infirmary, writes: Many of the trolleys used to convey patients to and from the operating theatre are unnecessarily primitive. Patients are often roused from their "premedication slumber" by the rude jolting they receive on the way to the theatre. After an operation under spinal analgesia, or if the patient is suffering from shock, it is a great advantage to be able to convey him to the ward with his feet raised and his head down. The trolley here illustrated has given satisfaction on these and other points. It is made of 1¼-in. (3.3-cm.) welded steel, the thrusting part consisting of



1¼ × ¼ in. (3.3 × 0.6 cm.) mild steel. At the rear end it has two fixed pneumatic-tyred wheels, and at the front end two spring-loaded castors, ensuring freedom from jolt and providing ease in steering. The tray is of 16 G. aluminium and is "dished" to the depth of 2¼ in. (5.6 cm.). A pole serves to carry the transfusion or infusion bottle, which is held in position by a stainless-steel clip. This pole is telescopic, so that its height can be adjusted when a patient has to be taken through a doorway or into a lift; and it can be fitted at either end of the trolley for leg or arm transfusion. The mechanism for tilting is stable and also adjustable, and when the tilt is in use adequately padded shoulder supports prevent the patient from sliding head first off the trolley. When the patient is lifted on to the trolley and when a tilt is not being used the shoulder rests can be turned away over the sides of the trolley.

The trolley is made by Messrs. Siddall and Hilton, Ltd., Sowerby Bridge, Yorkshire.

Correspondence

Caesarean Section

SIR,—There is no doubt that the paper read by Mr. C. McIntosh Marshall at the twelfth British Congress of Obstetrics and Gynaecology (reported in your issue of July 16, p. 147) on this subject was an excellent one, and that his results were magnificent. But unfortunately the modern caesarean section combined with penicillin and the sulphonamides makes it all appear too easy. In skilled hands there should be practically no mortality : in unskilled, the mortality will be high, and the unskilled will attempt it. That is why I suggested, not cynically, that normal labour would be an excellent subject for discussion at some future Congress.

The difficulty of knowing whether a case of slight disproportion or inertia will terminate with a live birth is great, and this knowledge can be obtained only by constant attendance in labour wards where the course of labour can be watched. Marshall made it clear that he did not advocate mass caesarean section, but I still feel that the *furor operativus* is being instilled too much in the minds of the young obstetrician.—I am, etc.,

Dublin. BETHEL SOLOMONS.

Peptic Ulcer and Smoking

SIR,—Your report (July 9, p. 78) of the discussion on peptic ulcer in the joint meeting of the Sections of Medicine and Surgery at Harrogate quotes me as saying that controlled American experiments[1] showed the importance of nicotine in ulcer production. This is not quite accurate. These experiments give a formal statistical proof, based on an adequately designed trial, of the importance of nicotine in preventing healing and in producing relapses, and my own experience confirms this. Curiously enough, the available evidence, for what it is worth, is rather against tobacco being responsible for the first development of an ulcer.

There is no proof that prolonged or repeated functional disturbances of digestion such as are produced by worry or nicotine lead to peptic ulcers. On the contrary, ulcers often form suddenly in persons with previously good digestions, while if a man manages to go six months with a bad digestion without getting an ulcer he can probably go six years or indefinitely without getting one. With a quiescent ulcer, however, the situation is different. Functional disturbances of digestion, whether due to worry, depression, irritative aperients, unwise mixtures of food or alcohol, or tobacco, can all lead to acute inflammation of the ulcer with an increase in size and an exacerbation of symptoms.

Blunderbuss prohibitions, like blunderbuss prescribing, are particularly objectionable in the management of patients with peptic ulcer; in these, extensive treatment carried on for several years is far more important than intensive treatment over a few weeks. Cutting tobacco consumption down from 15 cigarettes a day to three or four rarely makes much difference. In fact it may make an irritable, tense patient rather worse. It is better to warn the patient that he will be asked to stop smoking completely unless the ulcer is radiologically healed within a few months, but that he will be allowed to start again if complete abstinence does not cure him in a further six months.

If complete abstinence from tobacco does lead to an ulcer healing after all other measures have failed, it is probably unwise for the patient ever to start smoking again. It is one of the most dramatic things which one sees in medicine, when the patient who has refused to give up smoking for several years and whose weight has fluctuated between 9 and 10 stone (56.7–63 kg.) gives abstinence a trial, puts on 20 lb. (9 kg.) in weight within a few months, and at last loses his ulcer crater.—I am, etc.,

London, E.1. DENYS A. JENNINGS.

REFERENCE

1 Batterman, R. C., and Ehrenfeld, I., *Gastroenterology*, 1949, **12**, 575.

Syringes

SIR,—Dr. A. G. Rickard's account (July 16, p. 135) of a hospital syringe service prompts me to describe a similar service in general practice which we have now been running for two years. We are a partnership of four doctors, and, while we may have initiated the idea, the credit for experimenting with types of syringes and various packings and for maintaining the service must go to Mr. C. R. Stoffer, M.P.S. The pathology department of Chelmsford Hospital willingly carried out many bacteriological investigations.

While a few 10-ml. syringes are available for special purposes, we have found that a 2-ml. Record syringe with ceramic piston (" laminex ") covers most of our daily needs, and three sizes of needles are provided, 12, 15, and 20. With the needle attached, this syringe is fitted into a good quality test-tube (5 in. × ⅝ in. = 12.5 cm. × 1.6 cm.) up to the flange—a close fit being ensured with a half-inch (1.26-cm.) cuff of cellulose wadding. The whole is now put into a cylindrical aluminium container, similar to those in use before the war for the dispatch of throat swabs. A plug of cotton-wool at top and bottom prevents rattling. These containers were specially made for the purpose. After sterilization the doctor has immediately available a complete, dry, sterile syringe, easily and safely carried about in bag or pocket.

Syringes are sterilized in batches in a Maw's " sterotherm," an electrical hot-air oven, at 160° C. for one hour, and remain in the oven for a further half-hour during cooling. It is stated that the variation in temperature in different parts of this oven is never more than ± 2° C. Syringes were contaminated with bacilli and spores, sterilized, and then sent for investigation on many occasions before the method was accepted as being completely efficient. Care must be taken to place the cylinders needle upwards in the sterilizer or they may drop off as a result of the varying rates of expansion of the metals.

Packing and sterilization are done by the pharmacist, but after use the syringes are returned to the surgery and our receptionist carries out a simple cleansing process. Syringes are dismantled and washed in hot water. Syringes used for injecting oily substances are first cleansed in a little ether. Each syringe is then washed out in industrial spirit and completely dried—a strip of one-inch (2.5-cm.) bandage and a glass rod easily dries the inside of the barrel. Care is taken to replace the right piston in the right barrel. Replaced in the cylinder, they are transferred to the pharmacist. We have had no trouble with syringe markings; syringes over one year old are still quite clearly marked.

On an average we use about 20 syringes each day, and a stock of 80 provides an ample supply of sterile syringes. Breakages are due to (*a*) accident, and (*b*) failure to return syringes promptly for cleansing, when the piston is found to have stuck and forcible attempts to free it result in a broken barrel. We have had no casualties from the sterilization process.

With the steady increase in injection therapy the provision of a sterile syringe is a daily problem for the general practitioner. The cost of apparatus and the time and work involved in the process is probably more than the single practitioner can stand, but by combining into small groups they can themselves, or with the co-operation of their local pharmacist, institute a service similar to the one described above, and save a great deal of time on their rounds and in their consulting-rooms.—I am, etc.,

Witham, Essex. T. G. BENJAMIN.

SIR,—I am glad that Dr. A. G. Rickards (July 16, p. 135) has stated many of the requirements for a good syringe. The type of syringe with metal plunger which is in common use in this country is certainly a horribly inefficient affair, and it is amazing that it survives. I am surprised, however, that he makes no reference to the type of needle fitting. Of the two generally used, the Record and Luer, the Luer is larger and far more efficient at making an absolutely air-tight joint. In a procedure such as exchange transfusion in an infant, where a syringe and two-way taps are involved, an apparatus

made up with Record fittings is almost never air-tight, whereas with Luer fittings this is easily attained.

The second advantage of the Luer fitting is that the stouter nozzle makes it possible for an all-glass syringe to be strong enough to stand up to routine use, and I have had to discard few syringes for chipped or broken nozzles. The glass nozzle is a distinct help in venipuncture, since a trace of aspirated blood is visible.

I would make a plea that there should be a gradual change over to the Luer fitting for all apparatus. This would also make British and American apparatus interchangeable, since this fitting has long been standard in the U.S.A. The standard type of syringe should therefore be all-glass, with Luer fitting and (except in the smallest sizes) with eccentric nozzle.—I am, etc.,

Cambridge. DOUGLAS GAIRDNER.

Ovarian Hilus Cells

SIR,—It would seem probable that the cells described in the ovary by Mr. Wilfred Shaw and Dr. Burjor Dastur (July 16, p. 113) are the same as those which have recently been described by W. H. Sternberg (*Amer. J. Path.*, 1949, **25**, 493) under the name "ovarian hilus cells." According to Sternberg, these cells are likely to be found in all ovaries if enough sections are cut. They resemble the Leydig cells of the testicle, and their cytology varies. In size they are usually 14 to 25 μ in diameter, and in shape they may resemble fibroblasts, may be elongated, polygonal, or oval, or may be multinucleated. They may contain fat vacuoles, lipochrome pigment, or crystalloids of Reinke. They are found in clusters of various sizes, usually in the neighbourhood of vessels and nerves. They probably produce androgens, and cases with masculinization associated with hyperplasia and tumours of these cells are described.—I am, etc.,

Hull. A. J. SHILLITOE.

*** In a letter published in last week's *Journal* (p. 230) Mr. Wilfred Shaw and Dr. Burjor Dastur stated, "We believe that Sternberg's paper is the first full description of the cells written in English."—ED., *B.M.J.*

The Lock Hospital

SIR,—It would be regrettable if the threatened closure of the Lock Hospital were carried into effect. The venereal diseases, for the treatment of which the hospital was originally founded and which work it has done uncommonly well for so many years, are still with us—even in greater numbers than before the late war. There is need for more knowledge of these diseases among practitioners, so that we should increase rather than reduce the number of hospitals and clinics at which such knowledge can be acquired.

The late Sir William Osler in his famous Lettsomiam Oration (reported in the *Journal*, 1917, **1**, 694) at the Medical Society of London in 1917 on "The Campaign against Venereal Disease," said, "Venereal disease is and remains the despair of the statistician. Trustworthy data are not forthcoming. Even in death a stigma is associated with it, and the returns are everywhere but under the special caption of the disease itself." To-day, more than 30 years after Osler made this indictment, his statements are substantially true. To my knowledge several men whose children had been treated in my clinic for congenital syphilis died from syphilitic cardiovascular disease, yet the word syphilis appeared nowhere in the death records. Recently a former patient of mine consulted a cardiologist whom he misled by denying that he had ever suffered from venereal disease, though actually I had previously treated him and his wife and children for syphilis. Instances such as these serve to show that enlightenment of the public and, one may add too, of the profession is very necessary, and the more centres we have for instruction in and the treatment of venereal diseases the better for the community.

It might be said that such hospitals and centres are becoming redundant owing to improvements in the methods of treatment. This may prove to be an illusion, for some of us can remember how, with the introduction of "606," it was hoped that a single large dose—the *therapia sterilisans magna* of Ehrlich—would cure a case of syphilis. We subsequently learnt otherwise. It will take 10 years, possible 20 or even 30 years, before we can say with any degree of certainty that penicillin can cure human acquired or congenital syphilis or that it can with certainty prevent the antenatal infection of the infant. Meanwhile the patients need to be kept under observation, and in my opinion there is no better institution than the Lock Hospital for the humane, painstaking, and altogether efficient treatment of the venereal-disease patient and for the dissemination of knowledge concerning these diseases. Syphilis is a much more serious and killing disease than is realized at the present day, and I would exhort the authorities to think again before deciding upon the closure of the "Lock" to venereal diseases.—I am, etc.,

London, N.12. DAVID NABARRO.

Aetiology of Infantile Enteritis

SIR,—Your leading article (July 16, p. 141) draws attention to the fact that serologically identical strains of *Bact. coli* have now been found in a number of different outbreaks of infantile gastro-enteritis. It is important to stress that in these series, as in the original series reported by Bray[1] in 1945 and by Bray and Beavan[2] in 1948, there has been a high percentage of serious cases and, compared with many previous writers, a much less definite association with parenteral infection.

My own feeling is that we are at last establishing one common type of severe infantile gastro-enteritis as a disease *sui generis*. This is supported by the fact that we have found identical agglutinable strains in a high percentage of some 60 severe cases which have been admitted in the past year to two hospitals at Chester and Central Wirral. In two instances epidemics of 6 cases have followed the unwitting introduction of an infant infected with an identical strain among infants suffering from other conditions than enteritis.

I feel that there is now sufficient evidence to enable us to institute certain prophylactic measures. I would suggest that all infants admitted to institutions should have their stools examined for these strains, and that they should be separated as potentially infected until this is done. It would also seem to be a wise precaution to examine the stools of all pregnant women before delivery, and nursing staffs in maternity departments and sick infants' wards.—I am, etc.,

Chester. T. E. D. BEAVAN.

REFERENCES

1 *J. Path. Bact.*, 1945, **57**, 239.
2 Ibid., 1948, **60**, 395.

Tuberculous Empyema

SIR,—I should like to add a note to the quotation from my paper on pleurisy with effusion during pneumothorax therapy (*Amer. Rev. Tuberc.*, 1948, **57**, 598) reported in a leading article in the *Journal* of July 2 (p. 23). The quotation was taken from the conclusions reported at the end of the paper. It should be noted that 90% of the twenty-one empyemata developed slowly from serous effusions and did not rapidly follow the rupture of a tension cavity into the pleural space.

Empyemata developing from serous effusions can frequently be controlled by repeated aspirations, but those following cavity rupture can rarely be treated medically with success. Thoracoplasty, if possible, should be undertaken much earlier in the latter type, but an expectant attitude will in the former type spare some patients the necessity of having major surgical treatment, the underlying disease in the lung having become quiescent following the temporary collapse. Salkin and Cadden (*J. thorac. Surg.*, 1941, **11**, 109) reported that 80% of 225 empyemata were controlled by repeated aspirations.

I should like nothing I have said in my original article to influence anyone to revert to the disastrous practice of using thoracoplasty so late in treatment that it was, in fact, a desperate terminal remedy. Andersen (July 2, p. 6) expresses a similar view in his paper.—I am, etc.,

Abergele, N. Wales. JOHN B. MORRISON.

Rheumatoid Arthritis as a Psychological Disorder

SIR,—In your leading article (July 23, p. 221) entitled "New Problems in Rheumatism" you state, "Some physicians have considered that rheumatoid arthritis is a psychological disorder. The results of clinical tests with cortisone, during which any possible psychological effect was carefully eliminated by giving control substances for certain periods—with relapse in each instance—has disproved this theory."

Such a statement is surely somewhat facile and likely to be misleading, for it takes an altogether too superficial view of the psychogenesis of disease. The effectiveness of cortisone in rheumatoid arthritis in fact goes some way in support of the work of Selye[1] and the evidence of others he compounded in his conception of the "general adaptation syndrome." In this work he recognizes the potentiality of emotional stress at least as one of the causes of the syndrome.—I am, etc.,

London, W.14. J. W. PAULLEY.

REFERENCE

1 *J. clin. Endocrinol.*, 1946, **6**, 117.

Concussion and Hypertension

SIR,—My remarks in the discussion on head injuries were inadequately reported in the summary of the Proceedings of the Sections of Surgery and Neurology and Psychiatry at the Annual Meeting of the B.M.A. at Harrogate (July 16, p. 164). A short résumé of what I said is as follows. Eighty-three per cent of severe cases of post-concussional syndrome examined had a blood pressure higher than the standard of their age. Seventy-eight per cent of 33 men submitted to the CO_2 inhalation test proved to be hyper-reactors. The hypertension develops several weeks or months after the trauma, and appears to be a permanent sign, with a tendency to increase. The hypertension is neurogenic and is probably caused by a lesion of the hypothalamus or the medulla oblongata. Since the symptoms of the post-concussional syndrome and of hypertension are similar, it is likely that headache, giddiness, etc., after concussion are caused frequently by hypertension. The therapy should therefore be directed towards combating the latter. Hypertension and hyper-reactivity are often the only objective signs of the post-concussional syndrome, and have, therefore, a diagnostic and prognostic value.

In contrast to the hypertension, which is a late sequel, I found that the increased permeability of the blood–brain barrier, as shown by the fuchsin and fluorescein tests, is manifest only in the acute stage of concussion.—I am, etc.,

Lytham St. Annes, Lancs. D. ENGEL.

Influenzal Meningitis Treated by Penicillin

SIR,—Influenzal meningitis being comparatively common, and streptomycin not being readily available, the demonstration of its successful treatment with penicillin is of great importance. The article by Drs. Frances Braid and R. B. Meyer (July 2, p. 11) prompts me to report this case, which was very severe and recovered completely following penicillin treatment.

An infant, 7 months old, had been ill for three weeks before admission to hospital (refusing food, feverishness, loss of weight). Two weeks before admission weakness of left arm and leg, twitchings of face, and repeated vomiting occurred. She was treated with sulphathiazole by her own doctor and sent to hospital on Dec. 7, 1948. She was then listless, but resented examination. There was no obvious neck rigidity. The anterior fontanelle was tense and bulging, and the cranial sutures were separated widely. Temperature was 100° F. (37.8° C.). Lumbar puncture showed purulent fluid with numerous *H. influenzae*.

Some streptomycin was then available, and it was used as follows: intrathecally, 50 mg. on the first day and 25 mg. on subsequent days; intramuscularly 20 mg. per lb. (0.45 kg.) of body weight daily. On second, third, and fourth day of treatment the spinal fluid was sterile. On the fifth day the fluid contained many *H. influenzae* with well-marked pleomorphism. At this stage it was assumed that the organism had become resistant to streptomycin (actually it was later found that the *H. influenzae*, which was of a Pitman type B, was sensitive to streptomycin and also to penicillin in concentration of 20 i.u. per ml.). Penicillin treatment was started with 40,000 units daily intrathecally and 120,000 units intramuscularly 3-hourly. Sulphadiazine (1 g. 4-hourly) was also given. The spinal fluid became sterile after 24 hours and remained so. After nine days the intrathecal treatment (which was mainly done by puncture of the lateral ventricles) was discontinued, and several spinal-fluid samples remained sterile. Systemic treatment was discontinued on the 19th day of treatment. By this time the child was very well and eating and behaving normally. The hydrocephalus, which had been very marked, was hardly apparent.

She has been seen regularly for five months and seems perfectly normal, and even advanced, for her age. She is now 13 months old, can walk fairly well, understands many words, and seems very bright and intelligent.

—I am, etc.,

London, S.E.10. E. T. BASSADONE.

The Children Act

SIR,—Belatedly, and with great astonishment, I learn that under the Children Act, 1948, responsibility for the needs of children deprived of normal home life is vested in the Home Office, and that local authorities are to set up *ad hoc* committees and appoint children's officers. Britain used to lead the world in hygiene, but if the care of children, and especially those in question, is not the prime concern of the health authorities, then my conception of health and hygiene, including mental hygiene, must be wide astray. The Home Office certainly has an alluring title.—I am, etc.,

Melbourne. JOHN DALE, Medical Officer of Health.

The Triumphs of Psychotherapy

SIR,—I have just read the paragraph (July 2, p. 37) dealing with the most inspiring service held in Canterbury Cathedral on June 25, at which I was privileged to be present. One hesitates to question the pronouncement of a president of one of the Royal Colleges, but I feel that Lord Moran's statement, that when physicians had tried to follow the workings of the mind and its many aberrations he could tell of no comparable triumph as had been shown in dealing with disease of the body, cannot go unchallenged.

It is true that psychiatry is a young science and that there are many schools of psychological thought. But surely the very striking successes resulting from carefully arranged electric convulsion treatment and insulin-shock therapy in various forms of neuroses and psychoses, and more recently the benefit derived from prefrontal leucotomy in wisely selected cases, are veritable triumphs in the psychiatric realm. It would be very instructive to know what Lord Moran had in mind when he made this rather pessimistic statement. One does feel that considerable advances in psychotherapy will take place in the fairly near future, and that the outlook is not as black as the learned President has suggested in what was a very masterly address that should be very carefully pondered by all thoughtful people.—I am, etc.,

Epsom, Surrey. J. B. GURNEY SMITH.

POINTS FROM LETTERS

The Medical Directory

The editor of the *Medical Directory* writes: To maintain the accuracy of our annual volume we rely upon the return of our schedule, which has been posted to each member of the medical profession. Should the schedule have been lost or mislaid we will gladly forward a duplicate upon request. The full names of the doctor should be sent for identification.

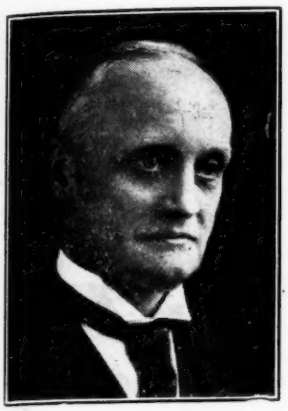
Prefrontal Leucotomy Incision

Dr. A. P. BERTWISTLE (Birmingham) writes: Why is the incision for prefrontal leucotomy made vertically? Nothing could be more obvious, particularly when bilateral. A somewhat longer incision made along the creases of the forehead would hardly be noticed, especially as part would be through the scalp. The superficial temporal artery could easily be drawn aside or ligated. That important landmark, the coronal suture, would be easier to find. The temporal muscle would, of course, be split in the line of its fibres. . . .

Obituary

RICHARD WALTER MARSDEN, M.D., F.R.C.P., D.P.H.

Dr. R. W. Marsden died at his home in Manchester on July 10 at the age of 81. He qualified with the Conjoint Diploma at Manchester University in 1891, taking the degree of M.B., Ch.B. a year later, after a distinguished undergraduate career, and proceeded M.D. in 1896. He took the D.P.H. in 1898. His ambition was to practise as a consultant, and he soon established a considerable reputation for his clinical acumen, especially in diseases of the chest. During this early period he became medical superintendent of the Monsall Hospital for Infectious Diseases, and university lecturer in that subject. Those who attended his classes speak of him as a dramatic teacher. Later he was appointed university lecturer in tuberculosis, and an honorary physician at Ancoats Hospital, Manchester.



In 1906 he became medical officer and in 1927 medical superintendent of Crumpsall Hospital, Manchester, and there he did his most important life's work. His association with this hospital began in 1892 as resident medical officer, and he could recall vividly the state of affairs in a poor-law hospital at that time, a story that illustrated the progress made in hospital work during the last half-century. In describing the history of Crumpsall Hospital from 1906 until he retired in 1933, Dr. Marsden modestly gave most of the credit to others, but those who knew him and his work for the hospital realized how much his foresight and strength of character did to raise it from a nineteenth-century poor-law hospital to a busy general hospital of high status and a first-class training school for nurses. He will long be remembered there with affection and esteem.

He was a good administrator, never afraid to face awkward problems, and he detested humbug. But first and foremost he was a physician of outstanding merit who relied on accurate clinical observation. Generations of residents who came under his wing have cause to remember his kindly but thorough tuition, not unmixed with admonition, and his capacity for seeing the whole as well as its parts. Crumpsall Hospital under his guidance gained a high reputation not only for the care of patients but as an excellent place for young doctors to learn medicine before going into practice. His election as F.R.C.P. in 1929 was a well-earned distinction, and one not commonly given at that time to medical superintendents of municipal hospitals. He came out of retirement in 1940 to take charge of a hospital in Macclesfield, and carried on this work until 1946.

Throughout his professional career Dr. Marsden was a most active member of the local learned societies, and in 1928 was president of the Manchester Medical Society, of which he was a trustee at the time of his death. A member of the B.M.A. since 1895, he was honorary secretary of the Section of Diseases of Children at the Annual Meeting of the Association at Manchester in 1902. In his younger days he was a good athlete, being specially proficient at gymnastics and swimming, and in later years a keen golfer.

Manchester medicine has lost a memorable and much-loved figure. He is survived by his three sons, all members of the medical profession, and by his second wife. His first wife, the mother of his family, died in 1936.

DOUGLAS EDWARD FINLAY, M.B., B.S.

Dr. Douglas Edward Finlay died at his home in Gloucester on July 10 after a long period of ill-health. He received his medical education at St. Mary's Hospital, London, and qualified in 1902, taking the London degree in 1905. After being house-surgeon at the Gloucestershire Royal Infirmary, he joined its honorary staff as assistant physician and settled in private practice in Gloucester. He was appointed honorary physician in 1913 and senior honorary physician in 1924, which position he held for 22 years until 1946, and was also visiting physician to the Gloucester City General Hospital. During the war of 1914–18 he served in France as a Territorial with the rank of major, and was mentioned in dispatches.

A member of the B.M.A. since 1903, he was honorary secretary of the Gloucestershire Branch from 1908 to 1916, and during that period played a notable part in the controversies over the National Health Insurance Act. He was president of his Branch in 1920, served for two periods on the Council (1912–14 and 1925–31), and was on the Journal Committee from 1925 to 1927; he was a representative from 1919 to 1924. Finlay had many interests outside his profession. As a member of the Gloucester City Council and, later, as mayor in 1926–7, alderman, and justice of the peace, he rendered much public service. His special interest in education was shown by his many years of work as chairman of the education committee, chairman of the United Schools' Governors, a lecturer to the Gloucestershire College of Domestic Science, and an examiner for the General Nursing Council. He also took an active interest in a number of learned societies, and was a Fellow of the Royal Geographical Society, the Royal Archaeological Society, and the Royal Society of Arts. Many and diverse pursuits engaged his enthusiasm, and he contributed to each a knowledge and sagacity which commanded respect.

As a physician Finlay was outstanding and had those inborn qualities of mind which make the great clinician. He loved medicine, reading extensively and pondering on its problems, and contributed to this *Journal* several notes on cases of unusual interest. To present him with a clinical problem was to be welcomed as a kindred spirit. His reputation as a consultant was high. In grave crises his presence imparted, to doctor and patient alike, a calm confidence which was remarkable. Yet it cannot be said that he devoted himself arduously to the practice of medicine. Often he was busy with political, educational, and other interests. It seemed as if all these activities, as well as the practice of medicine, were to him so many hobbies to be followed in turn as his mood dictated. But once a problem was presented to him, Finlay's friendly response, immediate interest, and readiness to help were completely disarming. He was a colleague truly loved.

He is survived by three daughters and two sons, to whom great sympathy will be extended.

The British Red Cross Society has issued its Annual Report for 1948. It gives a full account of the Society's activities during the year at home and abroad, and is obtainable (price 2s. 6d.) from the Society at 14, Grosvenor Crescent, London, S.W.1.

Medico-Legal

THE HAIGH TRIAL

MEDICAL EVIDENCE

[FROM OUR CORRESPONDENT]

At Lewes Assizes, before Mr. Justice Humphreys, on July 18 and 19, the trial took place of John George Haigh on a charge of murdering on Feb. 18 Mrs. Olivia Durand-Deacon, of Onslow Court Hotel, South Kensington. The Attorney-General (Sir Hartley Shawcross, K.C., M.P.), Mr. Eric Neve, K.C., and Mr. Gerald Howard appeared on behalf of the prosecution, and Sir David Maxwell Fyfe, K.C., M.P., Mr. G. F. R. Morris, and Mr. David Neve on behalf of the defence. The prisoner pleaded "Not guilty," but later this plea was amended to "Guilty of the acts charged, but insane at the time they were committed." Nearly 30 witnesses were called for the prosecution, and only one—a psychiatrist—for the defence. The circumstances of the murder and the disposal of the body of the victim have been given in such detail in the public press that it is unnecessary to repeat them here, and this report is confined to the evidence of the medical witnesses. After the two-day hearing the jury took only 14 minutes to arrive at a verdict of "Guilty," and the prisoner was sentenced to death.

Medical Evidence for the Prosecution

Dr. C. Keith Simpson, pathologist, Guy's Hospital, and lecturer in forensic medicine, University of London, said that on March 1 he had visited premises at Crawley known as Giles Yard, and on the wall of a workshop belonging to Hurstlea Products Limited he noticed, between two windows, a group of finely spattered blood-stains. Soil was lifted from the yard to a depth of about 3 in. over a considerable area, and a quantity of soil amounting to 575 lb. or thereabouts was taken away; it was later shown to him at New Scotland Yard by Chief Inspector Mahon. On March 2, 3, and 4 this was examined by him in the presence of Dr. Holden, director of the Metropolitan Police Laboratory, and in it were found, among other articles, intact upper and lower dentures and various human remains, including gall-stones and bony parts. Asked whether, from his examination, he concluded that a human body had been dissolved in sulphuric acid, Dr. Keith Simpson replied, "Yes, they represented part of one human body."

The Attorney-General: Was there anything to indicate that more than one body had been dissolved?—No, I found nothing.

Was there any indication at all of the sex?—Yes, one of the bones of the hip having sex characteristics was still partly preserved and was plainly, in my view, female.

Was there anything to indicate the probable age of the female whose body had been so destroyed?—I came to the conclusion that such as remained of the better-preserved bones were fragile and showed senile changes. I should say, I think, that the bones were those of an elderly woman—but no further; not more closely.

Asked if the remains gave any indication of the cause of death, witness replied "No," neither was any natural disease detected. There was no doubt that immersion of a body in concentrated sulphuric acid would in certain circumstances result in destruction of that body as indicated by the remains which had been found. Plastic substances, such as the handbag and dentures, would resist erosion, as would body fats and, for instance, gall-stones.

He formed the view that the blood splashes found on the wall could have got there if a person standing on the bench between the two windows had been shot through the head from behind. A pad of cotton-wool could be used to limit the flow of blood from the entry and exit holes of the bullet.

There was no cross-examination.

Miss Helen Patricia Mayo, dental surgeon, of New Cavendish Street, London, identified the dentures found at Crawley as having been supplied by her to Mrs. Durand-Deacon, a patient of hers, in 1947. Asked if she was certain of that, she replied, "I could describe them from my notes before I saw them." They had certain peculiarities which established their ownership beyond doubt.

Dr. Henry Holden, director of the Metropolitan Police Laboratory, New Scotland Yard, said that on Feb. 28 he had received from Inspector Symes a fur coat and a bag; the sleeves of the coat were patched and from the bag there had been recovered portions of fibre which had come from the coat.

Having produced sundry other exhibits, the witness said that he had received from Dr. Keith Simpson half a gall-stone. There was human blood on the gas-mask case and rubber apron already produced; these stains were associated with odd fibres of beech wood. A partly corroded rod which had been produced was also of beech wood, the fibres of which might have been deposited on the apron. There were also human blood scrapings on the apron. Comparatively recent small, but obvious, blood-stains were found on the blue shirt produced. The various constituent parts of the handbag produced, in his opinion, had formed one bag which had been immersed in sulphuric acid; the stitches had rotted and the bag had fallen to pieces. The gall-stone was human, having given a reaction to human protein. A small patch of human blood had been found at the junction of the collar, on the back of the neck of the fur coat.

Shown a penknife, and asked if there had been any considerable quantity of blood on it, the witness replied, "No, the merest traces, but they were human." It was not possible to tell the age of the person from whom the blood had come.

Dr. George Edgar Turfitt, deputy director of the Metropolitan Police Laboratory, said that on March 1 he received from Det. Insp. Symes a revolver which was in proper working order: on the inside of the barrel there was a quantity of unburned powder which, together with the fact that there were no signs of corrosion of the barrel, suggested that the weapon had been fired within the last week. He was also shown eight cartridges of a type which could have been used in such a weapon—an Enfield revolver. Other exhibits were identified and stated to have been attacked by concentrated sulphuric acid. A mackintosh and rubber apron contained a residue of sulphuric acid and animal fat, and acid residue was found on a pair of woollen gloves and a wooden rod. With Dr. Holden he had examined a quantity of earth, which he had subsequently taken away for further analysis and had found to contain, speaking generally, sulphuric acid, a high percentage of animal fat, and a certain amount of calcium and phosphate. On March 7 he had received from Dr. Holden a gall-stone which on examination proved to be "a typical gall-stone of the cholesterol type—a soft gall-stone."

Medical Evidence for the Defence

The only witness called for the defence was Dr. Henry Yellowlees, of Harley Street, physician for mental diseases, St. Thomas's Hospital, consulting psychiatrist to the British Expeditionary Force during the war. He was examined by Sir David Maxwell Fyfe.

Dealing with the accused's mental state, the witness said his first impression had been that he had very obviously what was called "a paranoid constitution." There had been no doubt about that after the first interview.

Asked upon what formative factors such a constitution depended, the witness said it was generally held to result partly from heredity and partly—perhaps even more—from environment—especially the early upbringing, home atmosphere, and experiences. In most adolescents the condition declared itself about the ages of 16 or 17, except in most unusual cases. In practical relation to paranoia, it was an essential preliminary of all the paranoid insanities. You could not suffer from any member of the group under the general description of paranoid insanities without being the possessor of a paranoid constitution—or temperament, as some people preferred to call it—which was the only soil, so far as was known, in which paranoia could develop and flourish.

Sir David: Would you deal therefore first with the medical evidence of the possession by the accused of a paranoid constitution? Would you describe that evidence as being scanty, considerable, or abundant? A. As regards the possession of the constitution, I would say the evidence was abundant and puts it beyond any question.

Q. And I think there are two lines upon which you approach that. What are those? A. The history of the patient, which I have

mentioned, and also, of course, his demeanour under examination and the many symptoms that he may show.

Q. Taking the first of those, the history: do you find here in the history what you consider to be the breeding-ground of paranoid constitution? A. Yes, the history as I have it is a most characteristic breeding-ground for the development of this constitution.

After a legal discussion upon the admissibility of evidence as to the prisoner's early home life being given by this witness, Sir David asked Dr. Yellowlees what, in his opinion, had been the religious atmosphere and surroundings of the prisoner's youth, to which the witness replied:

"I should say, sir, in view of what has been said, that every point was not actually mentioned to me by the accused; I have taken certain points which he mentioned to Dr. Matheson, and I presumed that he would mention them to me. Everything he did say to me agrees with what he said to Dr. Matheson."

Asked to confine himself, so far as possible, broadly to the information obtained from the prisoner, the witness said:

"He made it clear to me, from what he said, that he was brought up in a fanatically religious atmosphere, and he told me that newspapers and radio were forbidden in his parents' house, that friends and neighbours were excluded, and that the wrath and vengeance of God were held over his head as the punishment for every trifling misdemeanour. That, in summary, is what he told me about his home atmosphere. He told me also that his mother was greatly given to studying dreams in a future-telling sense and believed that the future could be told by them, and he told me that books upon these subjects were very readily available to him although newspapers and wireless were not."

Q. What opinion did you form as to the mental stability where you get, on the one hand, that extremely exclusive religious background and, on the other hand, this harping on and stressing the influence of dreams? Did you think that showed a heredity of mental stability, or the contrary? A. I think any household with that atmosphere is bound to be the very reverse of stable, and in this matter of heredity it is believed and said that this is the only thing which really is transmitted—namely, a mental instability. There is no obvious thing or disease that you have got that is transmitted; it is the mental instability.

Q. I suppose that, of course, one has to distinguish heredity and early environment. That early environment must have an accumulative effect on the heredity? A. Of course, the two things are interwoven; they cannot help being.

Asked if he attached importance to the absence of friends in relation to the paranoid constitution, the witness said he attached great importance to it and would attach even more to it if it were shown that that had been carried into school-days. A great authority, the late Dr. Percy Smith, had said in a famous address, "The solitary schoolboy is the potential paranoic," a view with which he heartily agreed.

"If you have a youth of inherited nervous instability," he said, "brought up in a solitary atmosphere and with the fear that unseen and punishing powers are all around him, he tends to run away from them in the only way he can—namely, into a world of, in the first place, fantasy and fairy-tale. He will not face his difficulties fairly, and he becomes progressively less able to do so. At first he merely thinks of some clever way round, of some clever way of avoiding punishment, and if it develops further, and if there is no clever way round, he goes into himself, into a world of fantasy, and makes an imaginary solution for himself, and comes to believe in it."

Q. By coming to believe in it, does that mean he blinds himself to the practical solutions and concentrates on the fantastic solution in his own mind? A. Yes, I should not have said "believe"; he blinds himself as far as he can.

Q. From the history he has given you, do you find illustrations of the formative action in bringing about a paranoid constitution? A. Yes.

Asked if he attached importance to the change of surroundings experienced by the prisoner when, from the age of 10 to 16, he exchanged the atmosphere of the Plymouth Brethren for that of Wakefield Cathedral, the witness said:

"Yes, great importance. Here was this youth, a boy, under a form of worship in which he did not believe himself, and of which he was frightened, and he is plunged into the opposite extreme—a form of worship where ritual and mysticism hold a very much more prominent place; and by entering into that he avoids the conflict between his beliefs that he has got in his early religion and his developing mind. . . ."

Sir David said that Haigh had been a chorister at Wakefield Cathedral and subsequently, at the age of 17 or 18, assistant organist, which the witness said he had accepted as general history, not obtained from the prisoner. The witness understood that at that time the atmosphere of the cathedral was very "High Church." Taking into account the very circumscribed and harsh surroundings from which Haigh had started, the change to surroundings of that kind would have appeared to the prisoner an ideal way of escape; the prisoner might not put it in that way, but that would be the effect, and it would be harmful to the extent of encouraging the tendency to avoid reality.

Asked if Haigh had given him an account of his dreams during that period, Dr. Yellowlees said (referring to his notes by permission of the Judge) that Haigh had told him that at that time he had experienced a recurring dream which he called "The dream of the bleeding Christ," and in that dream he had said that he could see either the head, or sometimes the whole body, of Christ on the cross with blood pouring from his wounds. All along it had been the question of blood that troubled him; he had said that at that time he had been unable to understand why Christ had been left to die slowly upon the cross and had not been killed at once.

The witness accepted from Sir David that that dream had stopped at about the age of 16 and had recurred once—when he had been in Brixton prison awaiting trial—but did not know that of his own knowledge. In his experience, such dreams were invariably associated with a very large amount of waking fantasy and day-dreaming.

Asked if a person in the course of forming a paranoid constitution was secretive, the witness said that was very important; they were almost invariably secretive up to a certain stage; it was the beginning of an entirely private and almost mystic life which they treasured because it was apart from the cruel world. If one had the confidence of such a person—which was not easy—at a fairly early stage—as was indeed the case in ordinary life—the person could be induced to unburden himself, after which he often went to the other extreme and became very voluble, verbose, and garrulous. It depended upon the two persons concerned and upon the stage of the disorder.

Asked whether, as the disorder formed and the subject became more and more wrapped up in his own fantastic and personal solution to life, he formed the view, generally, that he was much cleverer than and really on a different level from ordinary people with whom he mixed, Dr. Yellowlees replied: "Yes, that is the natural point. He can only preserve his self-esteem and conceal from himself the fact that life is too much for him by making these fantastic solutions and saying, just like every person who withdraws from life, 'Look what a clever solution I have made! Oh, the cleverness of me!'"

That being the first stage, the paranoid constitution upon which was erected the foundation of the structure of the mental disorder or aberration known as paranoia, Sir David asked whether there was much or little evidence of the second stage. Dr. Yellowlees said that before answering that question he would like to deal with one or two points further concerning the paranoid constitution. A person so affected had to live two lives at once; he had, so far as he could, to keep up the appearance of being clever and to avoid his "psychological bluff" being called. "You therefore find such people," he added, "though in no way obviously insane, to be extremely vain and very conceited, very fond of showing off and taking a delight in scoring off their fellow-creatures. A large number of the false-pretences people and the confidence tricksters have got a paranoid constitution. . . . It is an abnormality but it is in no sense a disease of the mind, and it is important to remember that the constitutional paranoid has got to keep his end up with regard to the society in which he lives."

In reply to Sir David, the witness agreed that one of the greatest authorities on paranoia was Professor Tanzi, of Florence, with whom the witness had been in contact and with whose work he was acquainted. The professor's book on mental diseases, which contained a chapter on paranoia, was a classic.

Sir David: I want to get it clear, Dr. Yellowlees, that paranoia is a recognized and discussed mental aberration and, if I may say so without offence, not something that you have created for this case. One wants to be quite blunt about these matters because the impression might exist. A. I am very glad you said so, sir.

Q. Dealing with that, in your view has the acute paranoid constitution, that abnormal personality that you have described, developed into the disorder known as paranoia? That is what I want you to address yourself to. A. The answer is "Yes," but—

Q. Could we just pause there for a moment, because I want to get it quite clear, if I may, in your words. I told my Lord and the jury yesterday that paranoia was a complete and permanent alteration of the entire personality which overwhelms the mental outlook, character, and conduct. Was I correct in saying that? A. You were correct, sir, but it would need, I think, some clarification.

Q. Well, will you clarify it, because counsel is apt to paint with a broad brush and I do not want there to be any mistake about it. A. I think the only essential qualification is you should say a completely well established paranoia, because paranoia, whatever else it is, is an extremely progressive disorder. You cannot say that it begins on this day and ends on that one.

Q. I quite appreciate that, Dr. Yellowlees. Putting in the word "completely"— A. Well established.

Q. "Well established paranoia." Would you say that I had put it correctly as a complete and permanent alteration of the personality overwhelming the mental outlook, character, and conduct? A. Yes, I think that is correct.

The witness said that after his second interview with the prisoner he had on the spot thought of the book which Sir David had mentioned and he had procured it, although he had not read it for 30 years, and he had found that the statements made in the book, which was regarded as a classic, and the matters which he had himself elicited had seemed so startlingly in harmony that he had felt it his duty to say so. The point where a man with the paranoid constitution developed into a paranoic was terribly difficult to make plain; there were varieties of paranoia, and the most important one for his purpose happened to be one of the most rare and terrible of the whole group.

"The word is sometimes used loosely among medical men," he added, "but if you ask a medical man what he means by a pure paranoia he will understand that you are talking about a condition of which this Professor Tanzi's is the classic description, and a very rare condition. It is technically called—I am sorry about this—one of the egocentric paranoias, and it is called 'ambitious' or sometimes 'mystical,' and the point at which it develops, so far as it can be a point, is when the patient's fantasy world becomes really his psychological home, where it becomes more real to him than his real world, and when his fantastic solution and his idea of personal cleverness passes all bounds and he regards himself as nearly as possible omnipotent. All his other activities, his work, his sexual activities, and so forth, are ignored and the energy that ought to go into them is turned into building up this fantastic life. Usually he does not get to the length—except in a very long-standing case—of regarding himself as a god, although I have met patients who did. Usually he stops short of that and regards himself as in mystical communion with some force or principle or outside power which guides him. I believe that the process has begun in this case. I cannot tell you how far it has gone."

Asked for his reasons for considering that the patient had passed from the "constitutional" stage into that form of insanity, from the medical point of view, Dr. Yellowlees said that was a difficult matter to deal with, because one of the very important grounds for his opinion was his lifelong experience and familiarity with patients of that kind, but there was first his conviction that the prisoner had a paranoid constitution in a high degree; then came a series of points which had a very cumulative effect taken together: to begin with, there was the very strong indication of a progressive development of a system of mystical ideas expressed with intelligence and lucidity but ever less related to the morals of ordinary society and ever more associated with reference to some vague force or principle under whose guidance he acted.

Sir David: Would you tell us what he gave as the first actual conscious revelation? A. He stated to me that his first conscious revelation took place towards the close of the period at Wakefield when he was 16 or 17, he said, and he was divinely guided to interpret a verse in the Old Testament as an instruction to drink his own urine, and it is a matter of fact that I understand he has consistently followed that instruction to this day, and he was certainly doing it when I saw him.

Q. Just pausing there for a moment, is it an accepted characteristic of paranoia that paranoics do follow what are well-known customs among primitive and savage tribes without knowing that they are following primitive customs? A. That is true. I should not have associated it with this particular act, because it is not altogether uncommon among mentally unstable and peculiar persons, but it may well be as you say, and it certainly is a fact that paranoics in general are really, though they do not know it, throw-backs; they are following the customs of primitive and savage peoples.

Mr. Justice Humphreys: They are what?

Sir David: "Throw-backs" was the word he used, my lord.

The witness: Atavisms. Would you quote Profession Tanzi in support of what I have just said about atavisms, to show it is not my own invention?

Sir David: Well, I think my learned friend has a copy of Tanzi and he can check on it in any way, but I think it will be enough for us if you say that that view is supported by Professor Tanzi and it is one of the characteristics that he points out, and you agree with that. A. That is so.

Q. Would you go now to the second of those points which you are emphasizing? A. Then he says that the second revelation was marked by the appearance—I think it was in 1944 or 1945—of what I call the "Tree Dream" which he described to me three or four times, always in the very same way.

Asked by Mr. Justice Humphreys to describe the dream, Dr. Yellowlees said:

"He said that it started after a motor-car accident. That may or may not have any importance: I do not know. The point is that he says that in that accident a lot of blood from a scalp wound ran into his mouth and revived his ideas about blood. I have no comment to make on that. The dream that he describes is that he goes out into a forest and sees before him an entire forest of crucifixes. These gradually turn into trees, and the trees, which have branches stretching out at right angles, appear to be dripping with dew or with rain. As he gets nearer he sees that it is blood that is dripping from the trees and not water. One of the trees then gradually assumes the shape of a man who holds a bowl or cup beneath one of the dripping trees and collects the blood which comes from it. As this happens he sees the tree get paler in colour and he himself feels that he is losing strength. Then the man in the dream, when the cup is full, approaches him and offers it to him and invites him to drink it. At first he says he is unable to move towards the man, and the man recedes and he cannot get to him, and the dream ends.

"He then tells me that this dream may be repeated for some nights in succession—once he said six or seven nights, and then again I think he said four or five—and during the time when the dream is recurring he is uneasy, distrait, able to do his daily functions all right, but not really at ease. He says that after this his killings occur and after them—after one or two of them, I think that is what he said; I am not sure—he dreams again the same dream, but this time the man does not recede from him and he is able to drink the blood."

Sir David: Did he tell you whether the dreams caused, in his waking hours, a desire for human blood? A. Yes. He was not very clear about that, but he simply said he was very uneasy and felt he must do something—and that was all he said to me.

Sir David asked whether the two factors to which the witness had attached importance—the drinking of the urine and the dreams which had been described—were an end of the fantasy or was there a further fantasy which defied description as to the working of that type of mind. Dr. Yellowlees replied that it had been shown that such statements were simply attempts to express what could not possibly be put into words. Even in the telling of a dream it was not always easy to be precise, and when dealing with these mystical fantasies it was impossible.

Asked whether there was complete absence of the sex element in the accused's conduct, he said there was a complete absence of any interest or activity in sex. That in itself was an abnormal thing.

Q. This was not a case dependent, then, on the sort of Viennese psychology that everything was related to sex? A. No, it had nothing to do with that. The absence of a sex element was important, because it was a very great abnormality of some kind that a physically healthy

young man, who did not seem to be at all scrupulous in his actions, should have no interest whatever in sex and sexual activity. It also happened to be stated in authoritative works that that was a thing found in paranoics, who sublimated their sexual energies into that self-worship and mystical fantasies.

Asked what differentiation the accused had made between his killings and his ordinary acts of dishonesty, the witness replied that the accused had been quite normal on that subject. As to his previous convictions (all for dishonesty), he had said that the third was not proper. The first two he admitted, and had said that he had to live like anybody else; having good enough wits and rather better than his neighbours, he really had to do the best he could. He really did it to get the artistic joy of a good job. He had said he was like an artist painting a picture when he had successfully hoodwinked his fellow creatures, which was typical of an early paranoic constitution and showed the conceit and vanity which were also to be observed in petty tricksters.

Questions by the Judge

In reply to his Lordship, the witness made it clear that none of the accused's previous convictions were for any form of violence; all were concerned with dishonesty. The killings were treated entirely differently by the accused in his statements. He had objected very much to the word "murder"—"It was, I think, almost the only sign of touchiness that he showed," he added. The prisoner had not minded their being described as "killings." He had said he had no special interest in rights or wrongs or in the laws of the country or in his victims, because "This is his destiny." He had said he had a destiny to perform—and believed it. The prisoner believed that the killings were the third revelation and—although he was not yet clear about it—he thought they might have to do with eternal life, but he did not know how. He was the instrument of an outside power. Before the killings he had had no particular plan; in one case he had said he had not known until a minute before that he was going to kill the victim. On the other hand, he had stated that after the killing he had taken every possible precaution to avoid detection because he knew perfectly well that murder was punishable by law and, like any other sensible man, he was anxious to avoid it.

Mr. Justice Humphreys: If I have got this right, Dr. Yellowlees, he told you he took steps to avoid detection afterwards because he knew quite well that to kill a person was a crime. A. Yes, my Lord; I think he used the phrase "punishable by law."

Q. Very well. A. And he added that of course it did not apply to him.

Q. What did not apply? A. What I have just said—that murder, being punishable by law, did not apply to him.

Q. I do not quite follow. Did he suggest that he was not amenable to the law. A. Certainly, my Lord.

Q. Why was he not amenable to law? A. Because he says that he is working under guidance and in harmony with some vital principle.

Q. And he thought if he said that everybody else would believe it? A. I would not say that, my Lord. The one thing he is not is a malingerer.

Sir David: Did he appear to you to believe? A. He appeared to believe it absolutely.

Mr. Justice Humphreys: He thinks he ought not to be punished? A. That is so.

Q. Does he really think he will not be punished, that if he is caught stealing or killing, or anything else, that he will not be punished? A. I asked him that, my Lord, and what he said was, "I am awaiting trial with complete equanimity. I am in the position of Jesus Christ before Pontius Pilate, and the only thing I have to say, if I do say anything, would be"—and he quotes, "There can be no power against me unless it were given him from above."

Sir David suggested that it was not uncommon for a murderer to show callous indifference and asked what the witness considered *unique* in the case. Dr. Yellowlees replied:

"I think the absolutely careless, cheerful, bland, almost friendly indifference of the accused to the crimes which he freely admits having committed is unique in my experience."

Asked whether he believed that accused had really had the "tree" dream, the witness replied that he thought the accused may have been exaggerating the effect that it had upon him because, as he had said, the paranoic person was very lucid and intelligent and lived in two worlds at once and here they were clashing; further, he did not think it possible that Haigh could have invented the dream.

Asked for his views on the accused's claim to have "tapped his victims and drunk their blood," the witness said he thought it was pretty certain that Haigh had tasted it; he did not know whether he had drunk it or not, and from a medical viewpoint it was not important, since blood had run through all his fantasies from childhood like a *motif* and was the core of the paranoic structure which he believed Haigh had erected.

He agreed, having seen many papers and statements written by the prisoner, that Haigh's writings were consistent with his being in a state of paranoia.

The witness said he was not prepared to pass an opinion on the legal test as to whether Haigh knew that what he was doing was wrong. The prisoner had gone "over the borderline" from possessing a paranoid constitution to being in a state of paranoia, but as to the extent to which that had occurred witness could not speak with the same definiteness.

Asked what contact and opportunities for observation would be necessary for a psychiatrist before he could properly answer that question as to the legal test, the witness said:

"I appreciate the importance of the question and I should like to make it clear why I am not prepared to answer it. Very few forms of insanity are amenable to the question which the law requires, because nowadays we do not regard insanity in terms of intellectual power or reasoning ability—medical people do not, I mean. I am here as an expert on medicine and therefore it will not be fair for me to give any opinion in words, in terms, that do not mean anything to me in this particular case. In other words, my view would be as good as anybody else's."

The question having been repeated, the witness said: "I do not think any psychiatrist could answer, or attempt to answer, that question unless he had lived with such a patient—a paranoic patient—for years."

Q. And therefore you prefer to give no answer to it? A. I give no answer.

Cross-examined by the Attorney-General

Cross-examined by the Attorney-General, the witness agreed that Haigh was a person on whose word it would be totally unsafe to rely; he denied that he had relied on it as the main basis of his opinion in this case.

Q. What objective signs of insanity are there in the prisoner? A. I think I should have to repeat all my evidence to say that.

Later the witness said that there were no "objective signs of insanity"; that was one of the oldest fallacies. He relied in the main on his lifelong experience of such cases and his observation of a cumulative series of symptoms, such as verbosity, egocentricity, inability to speak the truth, absence of any shadow of remorse, stories of dreams. Paranoia was the most difficult of all mental disorders to simulate. "I may be wrong, but I do not think I would have been hoodwinked." He was not relying on any one factor. The dreams were not the main reason for his opinion, although he attached great importance to them.

Sir Hartley suggested that, although Haigh had been constantly under observation, during the time he had been in prison he had only been seen to drink his urine on one occasion, when he had publicly demonstrated that he was able to do it. The witness said that, as a result of consultations with Dr. Matheson, he was quite satisfied that it was a fact that the prisoner did have that habit, although there was no other evidence of it.

Sir Hartley: Dr. Yellowlees, you know, of course, from the prisoner's statements in this case that he is a man who, in connexion with these various murders, has practised an elaborate system of forgery and false pretences in order to possess himself of his victim's property. A. I do not know "in order to possess them"; that is not a question for me. But he has done so, I believe.

Q. Well, with the result that he possessed himself of his victim's property. A. Yes.

Q. You know that from the statements that have been read out and to which you have no doubt had access earlier. A. Yes.

Q. You have mentioned his previous convictions: you know, do you not, that those convictions were for false pretences? A. Yes.

Q. In the first case for conspiracy to defraud, aiding and abetting forgery, and uttering and obtaining money by false documents, and

obtaining money by false pretences with six similar cases taken into account? A. Yes.

Q. Do you know that on the second occasion when there were seven similar cases, the charge was attempting to obtain money by false pretences and obtaining bankers' cheques by false pretences? A. Yes.

Q. You realize that in the past he has attempted, and sometimes been successful in deceiving others? A. Yes.

Q. You think it quite impossible that he might have deceived you about these dreams? A. It depends on what subject.

Q. And the other symptoms? A. I am sorry, sir, I do not see the relation between his previous convictions to whether I believe his story about dreams.

Q. Well, you see what I am putting to you, doctor? A. Not quite.

Q. I will put it to you frankly: it is that this man has been inventing a defence and has been deceiving you in regard to these symptoms upon which you have relied for your evidence that he is a paranoic. A. Well, I would say, sir, that there is no evidence either way conclusive; my opinion is just my opinion, which I have come to in good faith and which I am bound to tell, and I do not think I am likely to be deceived on this subject, but it may well be.

Q. You may well be deceived? A. Undoubtedly.

Q. You have not relied on anything, apart from your examination of the prisoner and his statements to you, as showing that he is a paranoic? A. Yes, I think I said that I relied, or I was confirmed by the startling similarity between his behaviour and the classic account of this disease.

Witness agreed he had seen the statement by Haigh's father, and, asked if it had assisted him in coming to a conclusion, he said he could not really remember that it had; he did not think it was possible for him to explain the various grounds upon which he had come to a medical diagnosis of the case, although he would try his best to do so. He had not the least recollection of the details of the father's statement.

After some discussion as to the legal admissibility of the evidence (the terms of the statement being finally excluded), the witness was handed a copy. He did not think the father's opinion would be very valuable.

Mr. Justice Humphreys: You would not suggest that the fact that the parents belonged to the sect described as Plymouth Brethren is any evidence of hereditary insanity? A. I never spoke of hereditary insanity; I took great care not to.

Q. You talked about hereditary conditions. A. I talked about hereditary instability, and I think that the fanatically religious sects show in that very fact evidence of instability. There happens to be a classic book on the subject called *Father and Son*, by Edmund Gosse.

The Attorney-General asked if the witness had ever heard or read of a case where the drinking of blood had been an indication of insanity or a motive for murder, and the witness replied, "No, I have not."

Q. Did you ever ask the prisoner how much he had realized in pounds, shillings, and pence from the murders of the Hendersons and the McSwanns, to which he confessed? A. No, I did not regard that as my province.

Q. But were you not considering it as part of your province to discover the motives for these offences, whether it was a motive which lay in the field of insanity or a motive which belonged to a mere mercenary field? A. That, I think, was quite obvious from the first interview with him—that there was no question of motive in the popular sense at all.

In his opinion it was not a matter of importance whether or not the prisoner had gained financially from his killings.

He agreed that the prisoner elaborated the accounts of his dreams from time to time. He thought he had heard from Dr. Matheson that the prisoner had not mentioned the dreams when he had been at Lewes jail previously. He thought the prisoner could not help dramatizing everything.

Q. Did you ask whether the urge to drink blood which came to him in these dreams immediately preceded the commission of the crime or would there be a long interval in between? A. All he told me, as I gave in evidence, was that he had a dream for four or five or six nights and that during that time he would be a little abstracted or distrait at large.

Q. Would the commission of one murder satisfy the urge that these dreams created in him? A. No, it is quite incredible that it should.

Q. You mean that he might want to murder a number of people because of the same dream or series of dreams? A. Yes, or because of the same delusional system in which he might certainly want to murder a number of people.

Q. Because of the same dream? A. I do not like to use the words "because of"; that is where we differ.

Q. Because of the same urge to drink blood following the dream? A. Following upon the dream I think it is certain that he would commit further acts of violence.

The witness further said, in reply to the Attorney-General, that paranoia was a profound mental disease. The Attorney-General quoted from Professor Tanzi's book, at p. 746, that "Paranoia is not a true disease but an intellectual anomaly." The witness replied that this was simply a matter of words. Sufferers from mental diseases, if they did not recover, passed into a state of mental enfeeblement called dementia, which was shown by alterations in the brain as an organ. The exception was paranoia. A man could be a profound paranoic for fifty years and upon death the examination of his brain would reveal no changes or alterations whatever. For that reason many purists in mental medicine declined to call it a mental disease; it was not a disease of the brain in that sense.

Asked whether, in ordinary everyday language, he would call Haigh a lunatic, Dr. Yellowlees replied that among doctors he would.

Q. I quote: "Paranoia is to be regarded as a simple developmental anomaly, the product of a passionate temperament and a methodical and pedantic mind." You do not agree with that? A. I do not agree with any sentence taken out of its context and applied to somebody thirty years after the writer is dead; but in general I agree entirely with the views expressed in that chapter, and indeed it was I, as I have told you, who discovered how important it was and brought the book here.

The Attorney-General further quoted: "The paranoic is an anomalous being, but he is not a lunatic in the common sense of the term." The witness said that that was expressed in the terminology of 40 years ago; it was written in general and had no application whatever to our present conception of diseases or to this particular case.

In reply to a suggestion that by reason of mental disease a man must be presumed not to know the nature and quality of his act and that it was wrong, the witness said that, for the reasons he had already given, he had no opinion to offer on that. The word "know" was one which, as an expert, he would not use; it would not be fair. He agreed that he had given evidence in many cases of alleged insanity before, and in reply to the suggestion that he had not previously had difficulty in saying whether or not in his view a prisoner had known that what he was doing was wrong, he said he thought that was so. He did not agree that in this case the prisoner, by reason of the elaborate preparations he had made, must have known that he was doing wrong; if that had been so he would not have dreamed of coming to the court to give evidence. He agreed that the prisoner must have procured the sulphuric acid in order to destroy the body. That was presumably because he wished to avoid detection as he did not wish to be punished. The prisoner certainly knew that murder was punishable by law as a general principle.

Asked if it was his opinion that the prisoner thought he was acting in obedience to something on a higher level, the witness replied, "That is what he says, yes." He was not satisfied that the prisoner realized that the law of this country was binding upon him; he was not satisfied that he had not known it was wrong. The word "know" was very difficult.

The judge suggested the substitution of the word "believe" for "know," and the witness agreed that it would thus be easier to answer the question; he thought it was very doubtful whether the prisoner had such belief. He thought the prisoner imagined he was acting under the guidance of a higher power, but he did not know. These questions of knowledge of right and wrong had very little to do with persons in the condition in which he believed the prisoner to be; it was the most difficult of all disorders to describe satisfactorily in a legal way.

The Attorney-General: I am not asking you whether the man decided, in obedience to a higher power, to do what he realized was wrong; I am asking you to look at the facts and tell the jury whether there is any doubt that he must have known that, according to English law, he was preparing to do, and subsequently did, something which was wrong. A. I will say "Yes" if you say "punishable by law."

Q. "Punishable by law" and therefore wrong by the law of this country. A. Yes, I think he knew that.

Re-examination

In re-examination the witness said he had never before given evidence in a case of pure paranoia; it was because of the difficulties arising out of pure paranoia that he was not prepared to answer the question as to whether the accused knew that what he was doing was wrong.

Sir David quoted the following passage from Professor Tanzi's book:

"Instead of believing himself to be surrounded by treacherous and hostile spirits, the paranoic with delusions of ambition is comforted by the presence of fetishes of guardian angels who, through supernatural means, are maintained in close relation with him."

That was precisely the same sort of relationship with an external force which the witness had described in his evidence.

Sir David quoted again, from p. 724:

"The paranoic delusion, on the contrary, is not a symptom, it is a mode of thought, an opinion which, however much it may be marred by preconceptions, has its roots in a special structure of the mind, in the paranoic constitution. It is the fantastic product of an egocentric but lucid spirit, which abandons itself without restraint to the mysticism of primitive man"—

a view with which the witness agreed entirely.

He agreed again that Dr. Matheson had given him every possible assistance; he had seen Dr. Matheson's own case history and had no reason whatever to doubt the facts contained therein, which in fact confirmed his own views.

The Attorney-General did not call evidence in rebuttal.

The judge, in his summing-up, outlined to the jury the principles of the M'Naghten Rules; he advised them that no jury was ever expected to decide whether or not a man was sane. That was entirely a matter for the medical authorities.

In this case the somewhat unusual course had been adopted of not calling any evidence at all as to the state of mind of the man and of asking no questions at all of any of the witnesses called for the prosecution as to whether he had exhibited any peculiarities which would make anybody think that he was not a perfectly sane and ordinary person. The defence had been content to say, "We are calling an expert upon insanity and diseases of the mind who has formed an opinion."

"Well, members of the jury," the judge continued, "if I were to say to you that you ought to follow the opinion of Dr. Yellowlees that would be, in terms, telling you to find a verdict of guilty in this case, because there is no doubt that Dr. Yellowlees, although it was very much against his will, was in the end forced to say, 'I cannot doubt that this man did know what he was doing.' He has said so in terms."

The jury retired, and subsequently brought in a verdict of "Guilty," and Haigh was sentenced to death.

Medical Notes in Parliament

Cancer and Tuberculosis Statistics

Mr. BEVAN circulated on July 14 the totals of deaths in England and Wales from cancer and tuberculosis, as follows:

Year	Deaths	
	Cancer	Tuberculosis
1920	42,420	41,439
1925	50,433	39,342
1930	56,204	34,821
1935	62,602	28,489
1940	68,922	28,144
1945	74,291	23,955
1948*	79,537	21,984

* Provisional

Grading of Hospital Staff

Mr. J. V. COLLINS on July 14 invited Mr. Bevan to define the qualifications of a senior hospital medical officer and the minimum qualifications of a consultant under the National Health Service.

Mr. BEVAN replied: "I should not presume to do so. Each individual case needs judging on its merits, by local professional committees suited to the task." He added that he had not the least intention of interfering with these committees. He could do no more than leave the matter to the members of the profession concerned. This was the first time that grading had been done, and therefore there could be no "demoting" from a superior to an inferior grade. There was a review of the initial decision, and arrangements had been made to establish machinery for the purpose.

Free Clothes for Patients

Mr. BEVAN was asked on July 14 by Mr. HAYDN DAVIES to what extent his practice was to provide free clothes for hospital patients. He replied that he had told hospitals, in effect, to go on doing what had already been proper hospital practice before the Health Service, which was to lend clothing to patients who could not provide it for themselves or get it from any other agency and to let them keep it on discharge when inquiries had made it clear that they could not otherwise get it. As in the past, this provision would normally only be required for long-stay ambulance cases without resources. Mr. Bevan deprecated the "grave misrepresentations" which certain newspapers had made in this matter.

Diphtheria Immunization

Mr. BEVAN stated on July 14 that doctors who certified deaths as due to diphtheria were not under an obligation to state whether the victims had been immunized. He explained that since diphtheria was a notifiable disease medical officers of health knew of fatal cases and could usually tell from the local authority's immunization records whether a child who died from diphtheria had been immunized.

Claim to Cure Mastitis

Sir WILLIAM Y. DARLING on July 12 asked the Secretary of State for Scotland why a registered medical practitioner who claimed to have a cure for mastitis and had made offers to his Department was not allowed to demonstrate this cure without submitting in advance information which might prejudice a fair examination of the claim.

Mr. WOODBURN replied that the medical practitioner referred to was free to demonstrate his alleged cure for mastitis, but it could not receive official backing until it had been thoroughly tested by impartial scientific experts. For that purpose details and method of treatment required to be disclosed. He could not accept the suggestion that disclosure of that information in advance might prejudice a fair examination of the claim.

Compound E

On July 12 Mr. A. R. BLACKBURN asked, in view of the evidence as to the efficacy of compound E in the treatment of rheumatic diseases, what steps were being taken through the Medical Research Council or other bodies to ensure the production of this drug on a large scale at the earliest possible date.

Mr. HERBERT MORRISON answered that research aimed at finding effective new substances akin to compound E was in active progress under the Medical Research Council. All these compounds were exceptionally difficult to make, and early success was not to be expected. Large-scale production of compound E itself was a matter for commercial laboratories rather than the Council, but again the difficulty of synthesis must hamper speed. American manufacturers of the compound had intimated that it was unlikely to be generally available for use by doctors even in the United States for several years at least.

Pulheems

Mr. D. RENTON asked on July 12 which medical categories qualified soldiers for service at Hong Kong.

Mr. E. SHINWELL said the fitness of soldiers for service overseas was assessed under the Pulheems system of medical classification, which had replaced the former medical categories.

Universities and Colleges

UNIVERSITY OF ST. ANDREWS

J. M. S. Manson received the degree of M.D. (with commendation) at the Graduation Ceremony held on June 30.

UNIVERSITY OF LONDON

The title of Professor Emeritus of Anatomy in the University has been conferred on Professor John Kirk, M.B., Ch.B., F.R.C.S.Ed., on his retirement from the S. A. Courtauld Chair of Anatomy at Middlesex Hospital Medical School which he has held since 1937.

ROYAL COLLEGE OF SURGEONS OF ENGLAND

At a meeting of the Council of the College held on July 14, Sir Cecil Wakeley was elected President in succession to Lord Webb-Johnson. Sir Harry Platt and Professor Ernest Finch were elected Vice-presidents.

Mr. Digby Chamberlain, Sir Stanford Cade, and Mr. A. Dickson Wright were admitted as Members of the Council.

Professor D. E. Derry, of Cairo, was admitted to the Fellowship, having been elected as a medical practitioner of 20 years' standing.

Professors and Lecturers for the ensuing year were appointed as follows:

Sir Henry Wade was appointed Thomas Vicary Lecturer.

Lord Webb-Johnson was re-elected as the representative of the College on the governing body of the British Postgraduate Medical Federation.

Diplomas of Fellowship were granted to Manibhai Ashabhai Patel and to Himadri Kumar Sarkar.

Dr. T. J. Gilmartin, Dr. Alan Cogswell, Dr. T. T. P. Murphy, and Dr. W. D. Arnison were elected Fellows of the Faculty of Anaesthetists.

Diplomas in Psychological Medicine and in Laryngology and Otology were granted jointly with the Royal College of Physicians of London to the following successful candidates:

DIPLOMA IN PSYCHOLOGICAL MEDICINE.—Y. I. Al-Kadi, G. H. L. Bullmore, R. L. Buttle, T. Elmahi, M. Engler, M. B. Feldman, W. N. L. Haynes, S. K. Jetley, D. H. Jones, D. T. Maclay, J. C. Marfatia, J. R. Mathers, D. L. Murti Rao, C. M. Vaillant, W. S. Watson.

DIPLOMA IN LARYNGOLOGY AND OTOLOGY.—B. S. Alderson, S. W. Allinson, N. C. Banerjee, H. A. Beagley, R. D. Bell, D. L. Chadwick, S. L. Citron, G. A. Dalton, W. V. Doyle-Kelly, C. N. d'E. Eastes, L. Fisch, T. B. Gupta, E. W. R. Hackett, J. T. M. C. Jenkins, T. Manickam, A. Mares, S. R. Mawson, M. J. Maxwell, M. F. A. O'Connor, M. L. O'Mara, J. T. Rossouw, C. C. D. Shute, Noreen M. Simpson, J. N. S. Taylor, J. D. Thompson.

The following hospitals were recognized under paragraph 23 of the F.R.C.S. regulations: Fulham Hospital (junior surgical registrar, first and second house-surgeons); Wanstead Hospital (Resident surgical officer and house-surgeon); Royal Salop Infirmary, Shrewsbury (second house-surgeon at Copthorne Hospital).

Hunterian Professors.—Mr. R. I. Harris, one lecture on spondylolisthesis; Mr. C. F. M. Saint, one lecture on stomatodaeal ruminations, clinical and non-clinical; Dr. S. A. Henry, one lecture on cutaneous cancer in relation to occupation; Mr. D. J. Browne, one lecture on congenital deformities of the urethra, vagina, and anus; Mr. J. B. Oldham, one lecture on renal denervation; Mr. J. E. Piercy, one lecture on factors contributing to safety in surgery of the thyroid; Mr. J. E. A. O'Connell, one lecture on a review of 500 surgically treated cases of lumbar intervertebral disk protrusion, with special reference to the late results of operation; Mr. H. F. Moseley, one lecture on ruptures of the rotator cuff; Mr. H. L. M. Roualle, one lecture on malignant disease of thyroid gland; Mr. E. M. Evans, one lecture on fractures of the radius and ulna; Dr. Ruth E. M. Bowden, one lecture on factors influencing functional recovery of peripheral nerve injuries; Mr. R. S. Murley, one lecture on post-operative venous thrombosis and embolism; Mr. M. R. Ewing, one lecture on villous tumours of the rectum; Mr. E. M. Nanson, one lecture on the respiratory responses to operative trauma.

Arris and Gale Lecturers.—Mr. D. F. E. Nash, one lecture on surgical aspects of renal damage in childhood: assessment, salvage, and aftermath; Dr. F. D. Stephens, one lecture on the diagnosis and management of Hirschsprung's disease; Mr. E. S. R. Hughes, one lecture on the development of the mammary gland.

Erasmus Wilson Demonstrators.—Mr. C. E. Shattock, two demonstrations; Mr. P. H. Mitchiner, two demonstrations; Mr. L. W. Proger, two demonstrations.

Arnott Demonstrators.—Mr. R. J. Last, three demonstrations; Dr. F. S. Gorrill, three demonstrations.

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ending July 9. [No. 27

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included). (b) London (administrative county). (c) Scotland. (d) Eire. (e) Northern Ireland.

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for: (a) The 126 great towns in England and Wales (including London). (b) London (administrative county). (c) The 16 principal towns in Scotland. (d) The 13 principal towns in Eire. (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

Disease	1949					1948 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever	39	4	15	1	—	24	1	20	1	—
Deaths		—	—				—	—		
Diphtheria	103	27	26	3	5	150	19	39	19	4
Deaths	1	1	—	—	—	3	—	—	—	—
Dysentery	59	10	27	1	—	56	5	34	—	—
Deaths				—	—				—	—
Encephalitis lethargica, acute	9	2	1	—	—	—	—	—	—	—
Deaths		—					—			
Erysipelas			14	5	1			23	8	4
Deaths		—					—			
Infective enteritis or diarrhoea under 2 years	37	2	4	55	3	34	2	7	40	—
Deaths				—					1	
Measles*	5,571	523	122	228	117	8,837	585	83	71	53
Deaths†			—	1	—			1	—	2
Ophthalmia neonatorum	29	3	6	—	—	37	6	13	—	—
Deaths										
Paratyphoid fever	32	2	2(B)	—	—	6	—	1(B)	—	—
Deaths	1	—	—	1	—	—	—	—	—	—
Pneumonia, influenzal	346	13	4	2	5	340	15	7	5	4
Deaths (from influenza)‡	6	2	—	—	1	3	—	1	—	—
Pneumonia, primary	115	12	130	23	5	116	13	108	28	4
Deaths				3					3	
Polio-encephalitis, acute	4	1				2	1			
Deaths										
Poliomyelitis, acute	73	5	6	1	—	23	3	2	1	—
Deaths§	6	—				2	—			
Puerperal fever		—	16				—	9		—
Deaths										
Puerperal pyrexia‖	103	9	7	1	—	84	6	3	—	—
Deaths		—					—			
Relapsing fever	—	—			—	—	—			—
Deaths										
Scarlet fever	946	66	130	53	29	1,658	89	297	42	33
Deaths†			—	—	—			—	—	—
Smallpox	—	—	—	—	—	—	—	—	—	—
Deaths				—	—				—	—
Typhoid fever	5	2	—	6	—	5	1	—	3	1
Deaths	—	—	—	—	—	—	—	—	—	—
Typhus fever	—	—	—	—	—	—	—	—	—	—
Deaths				—	—				—	—
Whooping-cough*	2,183	92	34	73	88	3,075	259	17	88	7
Deaths	6	—	—	—	—	4	—	—	1	—
Deaths (0–1 year)	239	22	30	13	18	231	22	33	13	11
Infant mortality rate (per 1,000 live births)										
Deaths (excluding still-births)	3,910	590	496	172	121	4,001	605	515	141	101
Annual death rate (per 1,000 persons living)			9·9	10·7				10·4	8·8	
Live births	7,690	1225	986	482	248	8,317	1328	1069	356	280
Annual rate per 1,000 persons living			19·8	29·9				21·6	22·3	
Stillbirths	185	26	34			205	29	23		
Rate per 1,000 total births (including stillborn)			33					21		

* Measles and whooping-cough are not notifiable in Scotland, and the returns are therefore an approximation only.

† Deaths from measles and scarlet fever for England and Wales, London (administrative county), will no longer be published.

‡ Includes primary form for England and Wales, London (administrative county), and Northern Ireland.

§ The number of deaths from poliomyelitis and polio-encephalitis for England and Wales, London (administrative county), are combined.

‖ Includes puerperal fever for England and Wales and Eire.

EPIDEMIOLOGICAL NOTES

Poliomyelitis

The number of notifications in the week ended July 16 was: poliomyelitis 112 (73), polio-encephalitis 5 (4). (Figures for the previous week are in parentheses.) Thus the rise in incidence, which was temporarily arrested last week, has set in again. Cases were widely distributed, but except for two in the Wigton R.D. in Cumberland there were none north of the West Riding. Only one case was reported in the eastern counties.

Multiple cases (poliomyelitis and polio-encephalitis together) were reported from the following counties: London 13 (6), Berkshire 2 (0), Cheshire 3 (2), Cornwall 4 (5), Cumberland 2 (0), Devon 9 (11), Essex 3 (1), Gloucester 6 (3), Hertford 2 (4), Lancaster 7 (5), Leicester 2 (1), Middlesex 11 (5), Southampton 14 (2), Surrey 4 (1), Sussex 2 (1), Warwick 2 (3), Yorks West Riding 19 (10), Glamorgan 4 (3).

The rise so far this year is closely commensurate with the upward trend which occurred during July two years ago. In the corresponding week of 1947 an "unprecedented prevalence" was forecast. Although once again an unusually high incidence is to be expected, there is a definite possibility that the curve of notifications will flatten out. Up to the present the large centres of population are not seriously involved.

Poliomyelitis Film

A 60-minute film entitled "Polio: Diagnosis and Management," produced by the Crown Film Unit in 1948 for the Ministry of Health, is now available. It is suitable for general-practitioner audiences and could be seen with advantage by nurses, physiotherapists, and public health staffs. The film is obtainable in 35- and 16-mm. sizes on loan from the Central Film Library, Imperial Institute, South Kensington, for showing to professional audiences if the organizer has his own projector; otherwise it can be shown on the C.O.I. mobile film units, by application to the regional film officer of the C.O.I., to professional audiences who can provide a properly blacked-out hall.

Prevalence and Tonsillectomy

In the memorandum on poliomyelitis by medical officers of the Ministry of Health (*British Medical Journal*, July 26, 1947) the following statement was made: "There is, however, overwhelming evidence that a recent tonsillectomy increases the risk of a child contracting poliomyelitis, particularly of the bulbar type. Prevalence of poliomyelitis in an area should therefore be an indication for the postponement of operations on the nose and throat whenever possible." The subject was discussed at the B.M.A. meeting in 1948 (*British Medical Journal*, July 17, 1948, p. 151) and the evidence was summarized by Glover (*Monthly Bulletin of the Ministry of Health*, 1948, 7, 150).

Clearly the decision whether a particular child should be operated on at a particular time and place is one for the surgeon performing the operation. This decision depends on balancing the probable benefit to the child against the probable risks of the operation. Both the benefits which may follow the operation and the danger of the child's developing bulbar poliomyelitis are to a great extent imponderable.

It has been established by many studies in the U.S.A. that when multiple paralytic cases are occurring in an area virus is widespread and the carrier rate is high, but there is no practicable routine way of detecting healthy carriers of virus. The medical officer of health of the area in which a child lives has up-to-date information on the incidence of poliomyelitis in his area, and the surgeon should take the local prevalence of poliomyelitis into account when considering the desirability of operating. Information on the incidence will continue to be reported in these columns.

Poliomyelitis in New York

Dr. Harry S. Mustard, Health Commissioner of New York City, has announced that the number of cases of acute poliomyelitis reported to the Health Department since the beginning of the year is well above the average for the last 20 years, but it is still too early to determine whether this will be a bad year (*New York Times*, July 15). In the first fortnight of July, 64 cases were reported. There were 12 cases in June, 3 in May, 1 in March, and 1 in January.

Discussion of Table

In *England and Wales* a decrease occurred in the number of notifications of measles 1,413, scarlet fever 85, whooping-cough 77, acute pneumonia 30; while increases were reported for diphtheria 23, paratyphoid fever 19, cerebrospinal fever 16, and dysentery 10.

The largest decreases in the notifications of measles were London 191, Warwickshire 158, Gloucestershire 99, and Surrey 88. The only large variation in the local trends of scarlet fever was a decrease of 30 in London notifications. Fluctuations occurred in the local returns of whooping-cough; the largest were decreases in Lancashire 66 and Surrey 31, and a rise of 52 in Durham. There was an increase in the notifications of diphtheria in London from 14 to 27 (Bermondsey 17), and an increase also of 12 cases in Liverpool C.B.

The only large return for paratyphoid fever was Lancashire 20 (Liverpool C.B. 16). The chief centres of dysentery were Lancashire with 23 notifications (Liverpool C.B. 18) and London with 10.

Nine cases of acute encephalitis lethargica were notified during the week, the largest return during recent years. Six of the 9 cases were notified in Cambridgeshire (Chesterton R.D.).

The greatest numbers of notifications of food-poisoning were in Yorkshire West Riding (Settle R.D.) 332 and the City of London 44.

The notifications of acute poliomyelitis were 7 fewer than in the preceding week. The largest returns were those of Devonshire 10 (Okehampton R.D. 5, Exeter C.B. 2, Northam U.D. 2); Yorkshire West Riding 10 (Dewsbury C.B. 2, Leeds C.B. 2, Batley M.B. 2, Colne Valley U.D. 2); London 5 (Wandsworth 2); Middlesex 5 (Hornsey M.B. 2); Cornwall (Camborne-Redruth U.D.) 5; Hertfordshire 4 (Hatfield R.D. 2); Lancashire 4 (Liverpool C.B. 2, Darwen M.B. 2); Glamorganshire 3; Gloucestershire 3 (Bristol C.B. 2); Nottinghamshire 3 (Basford R.D. 2).

In *Scotland* infectious diseases were less prevalent, and the fall in the number of notifications included measles 58, acute primary pneumonia 39, dysentery 34, whooping-cough 18, scarlet fever 16, diphtheria 11.

In *Eire* decreases were recorded in the number of notifications of measles 48, whooping-cough 16, primary pneumonia 15. The largest decreases in measles were Dublin C.B. 34 and Kerry (Listowel R.D.) 28. An outbreak of 10 cases of scarlet fever was notified in Tipperary (Tipperary U.D.).

In *Northern Ireland* decreases were reported in the number of notifications of measles 20 and diphtheria 8. The fall in measles was contributed by counties Antrim and Armagh.

Week Ending July 16

The notifications of infectious diseases in England and Wales during the week included: scarlet fever 1,043, whooping-cough 2,184, diphtheria 104, measles 5,376, acute pneumonia 330, cerebrospinal fever 17, acute poliomyelitis 112, dysentery 68, paratyphoid fever 50, typhoid fever 6.

Medical News

Osler Centenary Celebrations at Oxford

To mark the centenary of the birth of Sir William Osler the Oxford Division of the British Medical Association arranged a medical meeting and a dinner on July 12. It was appropriate both that the principal celebration took place in Oxford and that it was sponsored by the Association, for it was at the annual meeting at Oxford in 1904 that Osler decided to accept the regius chair at Oxford. The medical meeting was held at the Sir William Dunn School of Pathology, where Lieutenant-General Sir William MacArthur spoke to a large gathering on: "Of the Smallpox: a Review in the Osler Tradition." Sir William was followed by Professor Sir Henry Cohen, whose talk on "Subacute Bacterial Endocarditis" included an account of the part which Osler had played in the recognition of the condition. The commemorative dinner, at which over 200 were present,

was held at Christ Church, the principal speakers being Professor J. A. Ryle, Sir Hugh Cairns, and Professor A. D. Gardner. Dr. Peyton Rous, of the Rockefeller Institute, replied on behalf of a large number of distinguished guests. Great credit is due to the organizing committee and its secretary, Dr. C. W. M. Whitty, for the excellent arrangements made for the occasion.

Osler Club's Visit to Oxford

On Saturday, July 16, as part of the centenary celebrations, members of the Osler Club made a pilgrimage to places in Oxford associated with their "patron saint." After a visit to the collection of Robert Burton's books reassembled by Osler, the party lunched in hall at Christ Church with Professor A. D. Gardner, the Regius Professor of Medicine. In the early afternoon, through the courtesy of the librarian of the Radcliffe Science Library, the very interesting exhibition, arranged with the assistance of Dr. A. H. T. Robb-Smith and Dr. H. M. Sinclair, was inspected, and afterwards the party visited Osler's room in the Radcliffe Museum. Following a tour of 13, Norham Gardens, the warden, Miss Fairburn, provided tea in the drawing-room which Osler had added to the house. The day was concluded by breaking the return journey at Ewelme and visiting the charming old almshouse of which Sir William Osler was, in common with regius professors since Stuart times, *ex-officio* master, but in which he was the first to take a great interest. The beautiful little St. Mary's Church, which adjoins the almshouse and contains the memorial tablet to Osler and his family, is suffering from the ravages of the death-watch beetle; it would be appropriate in this centenary year if admirers of Osler expressed their respect for him by sending to the vicar of St. Mary's a contribution towards the cost of restoration.

Royal Institute of Public Health and Hygiene

The Harben Medal was presented to Lord Boyd-Orr, F.R.S., and the Smith Award to Dr. M. T. Morgan at a meeting of the Royal Institute of Public Health and Hygiene on July 21.

Industrial Health Services Inquiry

The committee set up by the Prime Minister, under the chairmanship of Judge E. T. Dale, to examine the relationship between the National Health Service and the industrial health services which make a call on medical man-power (June 11, p. 1056) met in London on July 22. Various bodies will be invited to give evidence.

Studying Medical Education

Dr. Anistas Shahine, dean of the faculty of medicine in the Syrian University, Damascus, is visiting Britain under the auspices of the British Council. After attending the Fourth International Congress of Otolaryngology held in London on July 18–22, he is studying the British system of medical education. Dr. Shahine qualified from the Syrian University in 1924 and later studied in Paris, specializing in diseases of the ear, nose, and throat. He joined that department of the Syrian University and was appointed professor in 1943, becoming dean of the faculty of medicine this year.

Hospitals Contributory Schemes

The British Hospitals Contributory Schemes Association (1948) held a general meeting on July 15, and accepted in principle a draft constitution prepared by its provisional executive committee. Mr. Henry Lesser was elected president, Mr. W. G. Nevin honorary treasurer, and Mr. John Dodd honorary secretary. During the year ending June 30, 1949, twenty-five contributory schemes had collected £1,738,340. The members of the scheme and their dependants are entitled to various benefits supplementary to those of the National Health Service. Figures are not available for at least twelve other schemes. Ten schemes collected £193,642 for charitable purposes such as hospital amenity funds, medical research, and medical charities. The association operates a clearing house, by agreement with the Treasury, for the receipt and distribution among the various schemes of contributions deducted from Civil Service salaries. The clearing house is handling about £30,000 a year.

Health Service Expounded

A pamphlet entitled *The National Health Service* has been prepared by the Ministry of Health and the Central Office of Information (H.M.S.O., price 6d.) describing the purpose of the National Health Service and how it is administered. It is intended for anyone at home or abroad interested in the Service, "and for those who are workers in the Service, without whose understanding and whole-hearted effort it could not succeed." It gives a fairly objective account of the general-practitioner and hospital services available, and, though enthusiastic about the effects of the Service, does not shirk mentioning the deficiencies that exist at present. Readers are warned in parenthesis that a private patient "must also pay to have his prescription made up at the chemist's—because the medicine cannot be regarded as separable from the doctor's advice and treatment." It admits that "the public has still to learn how to use the new facilities properly and economically," and adds: "Those who are actually running the Service have to get used to new conditions and changing needs."

WHO Sanitation Measures

A project costing $1,000,000 to improve sanitation throughout the world has been adopted by the Programmes Committee of WHO. Fifteen teams will give demonstrations on housing, town planning, and rural hygiene. The committee has also approved sanitary regulations to replace the various sanitary conventions adopted between 1903 and 1944. The guiding principle is the active suppression of epidemic disease wherever it appears.

Health Centres in London

The Health Committee of the London County Council is proposing that the Council shall acquire a site of about two acres at Southend Lane, Lewisham, for the purpose of a health centre. This will serve an extensive health service area and include two neighbourhood units which will contain ultimately a population of about 14,000 to 15,000, including the inhabitants of the Council's Bellingham and Flower House estates. The building will probably not be started for another five or seven years. It is also proposed to proceed forthwith to acquire certain sites in Walmer Road and Threshers Place, Kensington, for the erection of a comprehensive health centre. Both at Lewisham and Kensington it will probably be necessary to exercise powers of compulsory purchase, and permission under the Town and Country Planning (Development by Local Planning Authorities) Regulations, 1948, will be required.

Heberden Society

The Heberden Society held its annual meeting at Oxford on July 15 and 16, when the Heberden Round was taken at the Radcliffe Infirmary by Dr. Sidney Truelove in the absence of Professor L. J. Witts. Seven cases were presented for discussion by Dr. Truelove and members of Professor Witts's unit. They included a case of sclerodactyly and oesophageal stricture, on whom oesophagectomy had been performed. The pathology was discussed by Dr. Robb-Smith with the aid of slides. Other cases presented were: rheumatoid arthritis with Sjögren's syndrome; neuritis of the deep branch of the ulnar nerve, occupational in origin; ankylosing spondylitis with involvement of the peripheral joints resembling rheumatoid arthritis; hypertrophic pulmonary osteo-arthropathy, which was suggested to be pachyderma and pachyperiostitis; idiopathic steatorrhoea, which presented as anaemia and subsequently developed osteomalacia; and chronic hepatitis of nine years' duration with gross oedema and ascites and a subsequent remission following omentopexy four years ago. Dr. W. S. C. Copeman was in the chair, and Professor A. D. Gardner, regius professor of medicine, welcomed members of the society. On the previous evening a dinner was held in Magdalen College, with Dr. E. M. Buzzard acting as host to the members.

COMING EVENTS

Edinburgh Lectures

A series of open lectures has been arranged by the Edinburgh Postgraduate Board for Medicine in connexion with the post-graduate course in the medical sciences which commenced on July 4. The lectures, which are being delivered in the anatomy lecture theatre of Edinburgh University, began on July 11, when Sir James R. Learmonth discussed thrombosis; on July 18 Professor G. W. Pickering, the physiology of hypertension; and on July 28 Sir Lionel Whitby, the present position regarding leukaemia. Details of the remaining lectures will be published in the diary column of the *Journal* week by week. All students and graduates are invited to attend.

Congress of Military Medicine

The 12th International Congress of Military Medicine and Pharmacy will be held in Mexico on Oct. 23–29. It will be followed by a conference of the International Office of Military Medicine Documentation on Nov. 6–8 at Havana, Cuba. Information may be obtained from the General Secretary of the Comité International de Médecine et de Pharmacie Militaires, 79, Rue Saint-Laurent, Liége, Belgium.

SOCIETIES AND LECTURES

Tuesday

EDINBURGH POSTGRADUATE BOARD FOR MEDICINE.—At Anatomy Lecture Theatre, Edinburgh University, Aug. 2, 4.30 p.m., "*The Principle of Venous Pressure Reduction in the Treatment of Heart Failure*," by Professor J. McMichael.

APPOINTMENTS

Mr. D. Roy McCullagh, Ph.D., has been appointed director of the Sterling-Winthrop Institute's biochemistry laboratories, New York.

Mr. McCullagh has recently been carrying out research in endocrinology. He graduated with the degree of B.Sc. at the University of Manitoba, Canada, and in 1929 obtained the degree of Ph.D. at Cambridge University, where he studied under Sir Frederick Gowland Hopkins, Dr. T. S. Hele, and Professor J. B. S. Haldane.

BIRTHS, MARRIAGES, AND DEATHS

BIRTHS

Seward.—On July 10, 1949, to Margaret Mary (née Vaughan), wife of F. W. R. Seward, M.R.C.S., L.R.C.P., a daughter—Suzanne Margaret Linda.

Sherry.—On July 10, 1949, to Kathleen Robinson, F.R.C.S., wife of Dr. Vincent F. Sherry, a daughter.

MARRIAGES

Westlake—Whitton.—On June 29, 1949, at Alyth, Perthshire, Ernest Keith Westlake, M.B., B.Chir., to Nora Whitton.

DEATHS

Bell.—On July 21, 1949, Douglas Bell, M.B., D.P.H., of Cliffe House, Skelmanthorpe, Huddersfield, Yorks, aged 66.

Crossley.—On July 20, 1949, Leonard Crossley, M.D., of Highfield, Winsley, Bradford-on-Avon, Wilts.

Dalrymple.—On July 17, 1949, at 13, Southfield Road, Bude, Cornwall, Joseph Dalrymple, C.M.G. O.B.E., L.R.C.P.&S.Ed., L.R.F.P.S.Glas., Colonel R.A.M.C., retired, aged 80.

Davies.—On July 19, 1949, at Southsea, John Phillip Henry Davies, M.B., B.Ch., D.P.H., of Elgin, Llanishen, Cardiff.

Fletcher-Jones.—On July 11, 1949, at Chester, Arthur Fletcher-Jones, L.R.C.P.&S.Ed., L.R.F.P.S.Glas., aged 75.

Jackson.—On July 11, 1949, in hospital, Violet Jackson (née Conway), M.B., Ch.B., D.R.C.O.G., of 408, Street Lane, Leeds, 7.

Jones.—On July 11, 1949, at Beaconsfield, Bucks, Lawrence Jones, M.S., F.R.C.S.

Kelly.—On July 19, 1949, at Strathview, Friar's Lane, Lanark, Joseph Owen Kelly, F.R.C.S.Ed.

MacGregor.—On July 18, 1949, at Craigmount, Peebles, Scotland, Angus Vallance MacGregor, M.D., late of West Hartlepool, aged 82.

Marsden.—On July 10, 1949, at 25, Rathen Road, Withington, Manchester, 20, Richard Walter Marsden, M.D., B.Sc., F.R.C.P., D.P.H., aged 81.

Rait-Smith.—On July 14, 1949, at Hill End Hospital, St. Albans, Herts, Brian Rait-Smith, M.R.C.S., L.R.C.P., D.A., F.F.A.

Robertson.—On July 21, 1949, at Farhills, Fort Augustus, John Joseph Robertson, M.B., Ch.B., of 38, Highburgh Road, Glasgow, W.

Shackel.—On July 14, 1949, George Arthur Shackel, M.R.C.S., L.R.C.P., of Erleigh, Mayfield, Sussex, aged 87.

Stewart.—On July 16, 1949, at Hurst Garth, 2, Dallam Road, Shipley, Yorks, William Craig Stewart, M.B., Ch.B., F.R.C.S.Ed.

Sutter.—On July 9, 1949, at 44, Burges Road, Thorpe Bay, Essex, Robert Ross Sutter, M.D., late of Warboys, Hunts.

Walton.—Recently, Donald Walton, L.M.S.S.A., of Astule House, Oxford Road, Macclesfield, Cheshire.

Wilson.—On July 18, 1949, at Normanton, Charles Haddon Wilson, M.B., Ch.B.

Woodman.—On July 20, 1949, at 272, Battle Road, Hollington, St. Leonards-on-Sea, William Edwin Woodman, M.D., aged 94.

Wight.—On June 22, 1949, at 7, Dundas Avenue, Dudley, Worcs, George Douglas Wight, M.B., Ch.B., D.P.H.

Any Questions?

Correspondents should give their names and addresses (not for publication) and include all relevant details in their questions, which should be typed. We publish here a selection of those questions and answers which seem to be of general interest.

Green Staining of Teeth

Q.—*What is the cause of green staining of the teeth? Can this affect the permanent as well as the deciduous teeth, and is any treatment possible?*

A.—The most common form of green stain affecting teeth is of extrinsic type on the outside of the teeth and it can be removed. It is usually seen on the gingival third of the facial surface of the maxillary anterior teeth in children. The causation is not certain, but it is thought to be due to the action of chromogenic bacteria and is as a rule associated with poor oral hygiene. Intrinsic staining is far more rare, and is usually due to bile pigments carried to the pulp, from which they probably enter the dentinal tubules. Copper amalgam, which is occasionally used for filling deciduous teeth, will sometimes give rise to a greenish stain which permeates the teeth. Staining of the deciduous teeth appears to be more common than that of permanent teeth, although involvement of the latter has been recorded, and John Hunter (*Works*, ed. J. F. Pamer, 1835, **2**, 19) refers to the effect of jaundice on adult teeth. The treatment of the extrinsic type is simple and consists in scaling and polishing.

Intrinsic staining, if of the deciduous teeth, can be left. If, however, it is present in the permanent dentition, a difficult problem arises, since the introduction of bleaching agents necessitates entry into the pulp canal, the teeth thereby being devitalized. This procedure threatens the life of the teeth and gives rise to the risk of subsequent apical abscesses, etc. Severe staining of the anterior teeth is probably best dealt with by cutting down the tooth to a peg, leaving the pulp alive, and cementing a porcelain or acrylic resin crown over the peg. Reports of cases of green staining of the teeth have been made by the following: Craig, *British Medical Journal*, 1925, **1**, 453; Ellis, *Proc. roy. Soc. Med.*, 1938, **31**, 767; Boyle and Dinnerman, *Amer. J. Orthodont.*, 1941, **27**, 377; Thursfield, *Proc. roy. Soc. Med.*, 1912, **5**, Sect. Clin. Med., 148; and Langmead, ibid., 147.

Treatment by Tridione

Q.—*May I have some information about the use of tridione in petit mal and pyknolepsy? (1) How long should a patient be kept in hospital at the beginning of treatment? (2) How often are leucocyte counts necessary? (3) What are the toxic effects, and at what period of the treatment are they likely to arise? (4) Has treatment to be continued indefinitely?*

A.—(1) There is no need in the ordinary way to have a patient in hospital when starting treatment with tridione. (2) White blood-cell counts may be done once a fortnight for the first two months and then once a month, the frequency being reduced as time goes on. Attention should be paid to the actual number of polymorphonuclear leucocytes, and any counts below 4,000 per c.mm. should call for care. (3) Possible toxic effects, which are generally not so bad as the literature might suggest, include agranulocytosis, aplastic anaemia, and episodic hiccup; apart from the changes in the blood, these occur very early. (4) Treatment usually has to be continued indefinitely.

Hypertensive Blood Donors

Q.—*I understand that blood from patients suffering from hyperpiesis is not always suitable for transfusion purposes. Is this correct, and, if so, why? I should also like to know whether it is dangerous to bleed these patients?*

A.—There is no risk to the recipient when blood from a hypertensive subject is transfused. There is little risk to a benign hypertensive donor in relatively good health; but when degenerative vascular changes have set in there is some danger

of a stroke should the blood-letting result in syncope. Patients with angina run a similar risk of cardiac infarction in the event of syncope.

Threatened Abortion

Q.—*A young primigravida three months pregnant has had a moderate blood loss lasting four days, but the haemorrhage has now stopped. What are the chances that the foetus is alive, and how long can it be left with safety if it is not?*

A.—S. Bender found that in about 10% of all cases diagnosed clinically as of threatened abortion the foetus was dead at the time of investigation (*British Medical Journal*, 1948, **1**, 683). In the case in question, however, if there has not been any recurrence of bleeding or any discharge since the original haemorrhage, there is considerably more than a 90% chance that the foetus is still alive. There is no reliable method of making an immediate diagnosis, but estimation of the urinary pregnanediol or a biological pregnancy test, if carried out now and repeated again in a few weeks, might help. There is no harm in adopting a "wait and see" policy; indeed, that is the only way to make sure of the diagnosis. Provided there is no intervention, there is practically no risk to the patient even if the products of a missed abortion are retained for many months. Occasionally, however, minor upsets, such as general malaise and skin rashes, presumably due to absorption of products of degeneration, are seen.

Post-herpetic Pain

Q.—*A man aged 66 had a severe attack of herpes zoster of the right frontal region 15 months ago. The whole frontal region remains hypersensitive to touch, heat, and cold, while a severe neuralgia similar to the pain of the acute herpes still occurs. The patient is also blind in the eye opposite to the herpes, following corneal ulceration, and he has limited vision in the other eye. What further treatment is advised, apart from the continued use of analgesic drugs? Would nerve injection with alcohol interfere with the remaining vision?*

A.—It appears that the eye on the same side as the herpes has already suffered damage. Since nerve injection sometimes causes keratitis in a normal eye, the use of this method of producing analgesia might have grave consequences. The relief of pain in such cases is always a difficult problem and one not always capable of solution. The pain may persist for many years. Deep *x*-ray therapy has been tried with some success, but the mainstay of treatment is the use of analgesic drops.

Ulcerative Colitis

Q.—*A woman aged 35 has suffered periodically for three years from attacks of vomiting and blood-stained diarrhoea. Bacteriological examination is repeatedly negative, and the diagnosis is apparently non-specific ulcerative colitis. Recently the condition responded rapidly to phthalylsulphathiazole, but on stopping the drug there seems to be a tendency to relapse. (1) How long will it be safe to continue with this drug? (2) Could the intestinal flora be kept more nearly normal by giving, say, lactose after stopping phthalylsulphathiazole? (3) Is penicillin likely to be of use? (4) If the case proves resistant, would retention enemata be of any avail?*

A.—It is not uncommon to find that phthalylsulphathiazole controls the diarrhoea of ulcerative colitis, and at times a course of treatment may initiate a remission. Unhappily, relapse immediately the drug is withdrawn is frequent. When this treatment was originally introduced a dosage of 0.2 g. per kilo of body weight four-hourly for four weeks was recommended. The part played by the bacterial flora of the bowel is uncertain; there is no evidence that ulcerative colitis is primarily a microbic infection, and thus no reason to suppose that a change in the bowel organisms would benefit the patient. At one time an emulsion of *Lactobacillus acidophilus* was often prescribed with the aim of altering the bacterial flora, but it had no noticeable effect on the course of the disease. Penicillin may control secondary bacterial invasion of the ulcerated colon; the importance of this process is hard to assess, and the effects of the drug are not impressive. Retention enemata of 7 to 10 g. of phthalylsulphathiazole in 200 ml. of water or mucilage have been employed and are often useful.

NOTES AND COMMENTS

Unilateral Flush after Food.—Dr. THEODORE JAMES (Boston, Mass.) writes: In 1945, under this heading, you published a question I put to you (*British Medical Journal*, 1945, **1**, 687). This drew two interesting comments from Dr. F. Parkes Weber (p. 758) and Dr. A. D. McDwyer (p. 794). It might be of interest, therefore, to record, because of the rarity of the phenomenon, two more almost identical cases which came within the ambit of my experience within less than three months last year. The first was a boy of 10 who was seen with the chief complaint of poliomyelitis. The story of unilateral flushing of the face after food was volunteered by his mother during the taking of the history. This had first been noticed in very early childhood, was becoming less frequent, and more often than not required spices to provoke it. The boy himself could guarantee dill pickle to produce it when other agents failed. Sweating was not in evidence. The second case was a little girl of 2 who was presented by her mother for repair of her cleft palate, and as an afterthought requested that something be done about a unilateral flushing of the face which recurred regularly with or after meals, and had been doing so for some time. In neither of these two cases were there any associated subjective symptoms, and in all three the manifestation was on the left side of the face. Not even suggestive evidence of previous local pathology was forthcoming.

Dicoumarol and Prothrombin Level.—Drs. ROSEMARY BIGGS and R. G. MACFARLANE write from the Pathological Department of the Radcliffe Infirmary (Oxford): Under "Any Questions?" (July 2, p. 38) you print a reply to a correspondent who is interested in the control of dicoumarol therapy. In this, Russell viper venom is recommended as thromboplastin for the estimation of prothrombin by the one-stage technique. We feel that the particular correspondent, and any others who may read this reply, should know that the use of the venom, with or without lecithin as a substitute for brain, may give most misleading results. Higher values for the "percentage of prothrombin" may be obtained with venom than when brain is used as thromboplastin. Lempert[1] has drawn attention to this danger in your columns, and we have since then been informed of several cases in which disastrous overdosage of dicoumarin was encouraged by an apparently safe level of prothrombin as estimated with venom. These and other experiences have prompted investigation of the difference between Russell viper venom and brain (Wilson,[2] Biggs and Macfarlane,[3] Mawson[4]). These investigations have all shown the danger of this modification of Quick's one-stage technique. We feel that venom, with or without lecithin, should not be used for any routine estimation of prothrombin and that it is particularly undesirable when used for the control of such a dangerous drug as dicoumarol.

REFERENCES

1 *British Medical Journal*, 1948, **1**, 125.
2 Wilson, S. J., *Proc. Soc. exp. Biol., N.Y.*, 1947, **66**, 126.
3 *J. clin. Path.*, 1949, **2**, 33.
4 *J. Lab. clin. Med.*, 1949, **34**, 458.

Drs. K. P. BALL and H. O. HUGHES, writing from the Central Middlesex Hospital (London, N.W.), also refer to the work quoted above by Drs. Biggs and Macfarlane. They continue: We too have found that Russell viper venom is a most insensitive thromboplastin in the estimation of dicoumarol hypoprothrombinaemia using Witts and Hobson's technique. Serious haemorrhages are liable to occur with little increase in the prothrombin time. Since changing to Quick's method, using brain extract as thromboplastin, significant spontaneous haemorrhages have fallen from 10.4% to 1.5%. No serious haemorrhage has occurred when the plasma prothrombin content exceeded 10%. The use of Russell viper venom inevitably leads sooner or later to serious dicoumarol haemorrhages, and as a result a valuable drug is blamed.

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